

RoRo StretchPack®

Insulation packaging

6-sided packaging - 100% waterproof



RoRo StretchPack® :

100% waterproof insulation packaging

Ensuring dry insulation materials arrive on the construction site is a vital part of successful building projects. Moisture in the materials can compromise the insulating properties and may lead to other problems down the line. Therefore, waterproof sealing packaging of the insulation materials is crucial.

RoRo StretchPack® offers a 100% waterproof packaging solution for insulation materials. Your products are packed into a tubular stretch hood film, which is welded at the ends to ensure 100% waterproofness. Welding and sealing occur during the packaging process.



RoRo StretchPack® is high quality packaging



- 100% sealed and waterproof
- Uniformity and high repeatability
- High tear and puncture-resistance
- Smooth surface (not sticky film)
- Short strong sealings in the ends
- Optimal for branding



Using RoRo StretchPack, you can remove the strapping process from your packaging line. Bearers and spacers can be included inside the packaging film. The stretch hood film will then hold them against the bottom of your products.



Using a stretch hood film gives a tight and uniform packaging.

RoRo StretchPack® :

Film saving packaging with high repeatability

Due to the properties of the tubular stretch film, RoRo StretchPack® performs a tight, single-layer packaging. From our customer's cases, we typically see between 25-60% in film saving when shifting to RoRo StretchPack® compared to conventional packaging technologies.

The packaging and sealing process requires no heat shrink, so the film will stay smooth without curling and crumbling due to heat. Moreover, if you are replacing heat shrink with RoRo StretchPack®, you will also see a significant decrease in your energy cost.

A sustainable packaging solution



- Reduce film consumption by up to 60%
- Reduce energy consumption by up to 90%
- Improve working environment by a fully automated packaging solution



RoRo StretchPack® is suitable for packaging both mineral wool and rigid foam insulation panels. The packaging machine has different options depending on the material type and packaging requirement.

RoRo
STRETCH PACK



RoRo StretchPack® :

Designed to increase your packaging capacity

The RoRo StretchPack® packaging machines are designed leveraging the expertise we've acquired through our collaboration with some of the leading manufacturers in the insulation industry. We've developed a range of features and options, allowing the machine to be customized to meet your packaging needs and ensure a seamless integration with your production line.

To meet the stringent requirements of industrial production, which potentially operates 24/7, it is essential to have high capacity and uptime. This is achieved through features such as a large film capacity, quick film roll changes, the absence of chains requiring lubrication, and minimal maintenance. Additionally, all machine parts are standard components from high-quality brands, ensuring they are easily accessible.

Measuring bridge for packaging in random order

Internal conveyor unit and top pressure rolls to secure and hold products

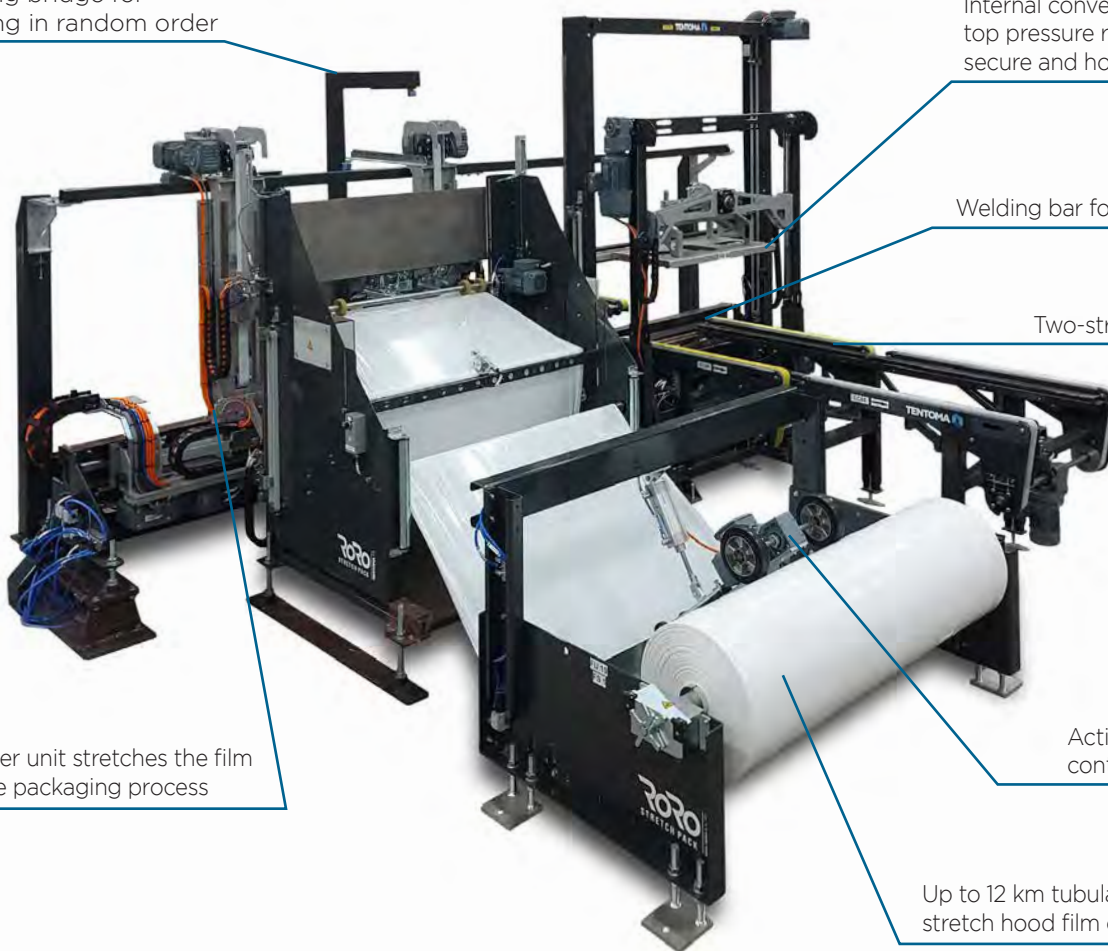
Welding bar for 100% sealing

Two-string conveyers

The gripper unit stretches the film before the packaging process

Active film stand controls film flow

Up to 12 km tubular stretch hood film on a roll



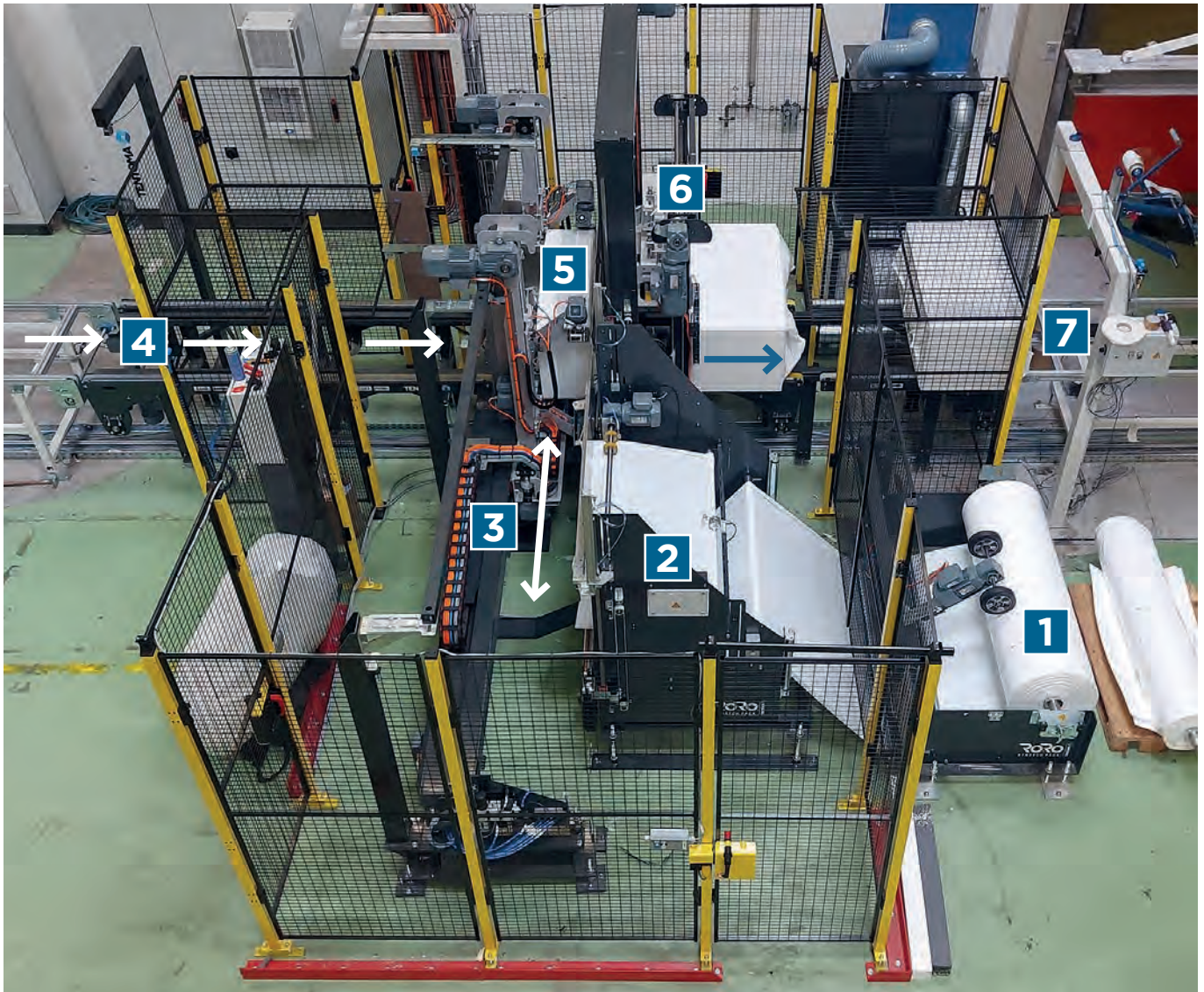
RoRo StretchPack®
designed for high uptime

RoRo
STRETCH PACK

- Large film capacity on a film roll
- up to 6 km depending on thickness
- Fast change of film roll - 2-4 minutes
- Automatic shift between different film sizes
- Minimal cleaning and maintenance
- Packaging of both batch and in random order

Depending on your product range, it is possible to install multiple film stands for different film sizes or different branding.





A RoRo StretchPack® packaging line completed with a safety fence. The numbers indicate the production flow.

1 The film stand (FS)

Hold up to 12 km of film.

2 The film unit (FU)

Welds the front end of the tubular film to create a hood.

3 The gripper unit (GU)

Stretches the film and moves it to the packaging lane.

4 The in-feed conveyor

Receives the panels from the production line.

5 Internal conveyor unit (ICU)

Holds and moves the panels into the stretch hood film.

6 The back sealing unit (BU)

Seals the 6-sided packaging.

7 The output conveyor

Transports the packed panels for palletizing.



Internal conveyor unit ensures high packaging capacity

To guarantee stable packaging of stacked panels, it is an option to install an internal conveyor unit (ICU). It holds and transports the panels into the stretch hood film. This enables higher packaging speeds compared when using a pusher. In combination with top pressure rolls, the ICU also prevents slippage between the panels during high-speed packaging.

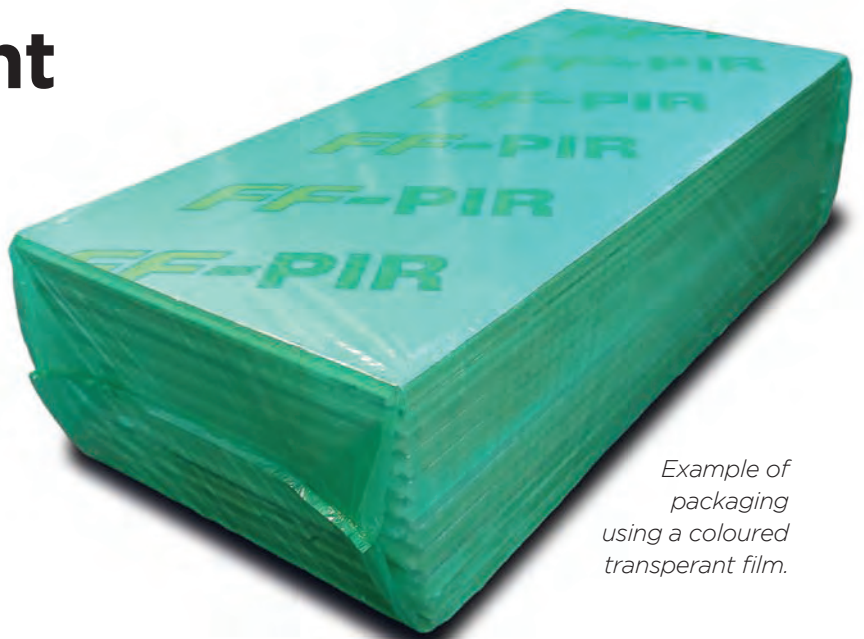
RoRo StretchPack® :

Perfect for print and branding

The tight and uniform packaging presents your products nicely to customers. RoRo StretchPack® packaging also enables an obvious option to have print on the packaging film. Packaging film with printed logo or product, will differentiate your products from competitors and enhance your branding.

Clear print without distortion

The single-layer packaging ensures the printed graphic appears clear and nice without distortion. The cold packaging process means no film is curling or crumbling due to heat from a shrink oven.



Example of packaging using a coloured transparent film.



It is possible to print multiple colours on the stretch hood film.

RoRo StretchPack® improves branding

- Uniformed, smooth and tight packaging
- Sealings are only in the roll ends
- Film is suitable for a print of logo etc.
- Film can be transparent or coloured
- Film with UV blocking is an option



Mineral wool packaging

Isover Saint-Gobain

Forssa, Finland



The Isover plant in Forssa, Finland is manufacturing mineral wool for the building industry. Isover is a part of Saint-Gobain.

Isover's production plant in Forssa is manufacturing mineral wool insulation for the building industry. For a long time, there had been considerations of modernizing the existing heat shrink packaging line.

Project manager at Isover Tuomas Rilla tells: "We wanted to improve the working environment and the packaging quality to ensure that it is waterproof. Even if our products not will be damaged by moisture and water, the mineral wool must be 100% dry before it is put next to a vapour barrier in a building." He adds: "We also wanted the packaging to be more environmentally friendly and of course, the appearance should be nice."



The Isover mineral wool packed and sealed using the RoRo StretchPack® machine.

Horizontal stretch hood packaging replaces heat shrink

The new RoRo StretchPack® packaging line was installed to replace a heat shrink packaging system. The new solution was a RoRo StretchPack® Large D2 packaging machine. The machine is a Duplex version equipped with two gripper units. This provides a high packaging speed aligned with the rest of the production line. There are two film units installed at each gripper unit, which ensures that there is no production stop when a film roll is empty. Each film roll contains 6 km of film - which gives a total film capacity of 24 km.

100% waterproof and significant savings

When the new packaging line was fully implemented. Tuomas Rilla concludes: "Compared to earlier the packaging quality has improved significantly. Now we have a more uniformed and smooth packaging which also is 100% waterproof."

Benefits for Isover

- Reduction in film consumption on 50%.
- Energy reduction on 165 MWh/year (=10 homes).
- Reduction in CO₂ emission on 30 tons/year.
- Reduction in transport equivalent to 15 truckloads per year due to tighter packaging.
- Better logistics in the production area because the new packaging line takes up less space than the heat shrink packaging line.

Source: https://www.isover.fi/artikkeli-uutinen/pakkaukset-ja-varastointi#-pakkaukset_ja_varastointi

Rigid foam packaging

Steinbacher Dämmstoff GmbH

Erfendorf, Austria



Steinbacher Dämmstoff GmbH has installed a new packaging line for PU insulation panels. A RoRo StretchPack® solution has replaced two packaging lines for packaging multiple panel sizes. Improved 6-sided packaging and automation are the headlines behind installing the new packaging line.

For some time Steinbacher was looking for a new solution for packaging their PU insulation panels. The primary reason was the need for better packaging quality. Production manager at Steinbacher in Erfendorf, Mr Markus Brandstätter tells: "It is important for us to have waterproof packaging. Our end-customers do always store the panels outside on the construction site, and in peak time we do not always keep the panels under the roof before shipping". Mr Markus Brandstätter continues, "Our previous packaging solution was simply not waterproof, which posed a risk of water between the panels when storing the panels outside".



STEINBACHER

Dämmt besser. Denkt weiter.

Steinbacher Dämmstoff GmbH is an Austrian full-service provider of insulation materials (EPS/PU/PE/Stone wool) servicing Central Europe. It is a family company having facilities in Poland and Germany.

Previously, the standard-size PU panels (1200x600 mm) were packed by putting a sleeve around a bundle of PU panels, resulting in 4-sided packaging. The bundles were then stacked on a pallet, which was wrapped using stretch wrap film. The large-size panels were previously packed utilizing heat shrink, but there were constant problems with the weldings. So, neither of the packaging methods provided full waterproofness.

Six-sided packaging - sealed and waterproof

"A few years ago, we came across RoRo StretchPack® produced by Tentoma", Mr Markus Brandstätter says. RoRo StretchPack® is horizontal 6-sided packaging utilizing a tubular stretch hood film. Only the two film ends need to be welded to achieve sealed and waterproof packaging. Packaging and sealing are done in the same process. It is developed by Tentoma in Denmark, inspired by the well-proven vertical stretch hood packaging technique, typically used for 5-sided packaging of pallets.

Mr Markus Brandstätter explains: "After the initial assessment, we sent different sizes of product samples to Tentoma for test packaging. When the packaging samples returned to Austria, they were thoroughly tested regarding packaging quality, environmental impact, and logistics. We also investigated consumables, potential savings, and automation, to evaluate the business case".

Bundles of PUR panels in new 6-sided packaging. Uniform packaging using a stretch hood film, with sealing in each for full sealing.

Removing heat shrink packaging provides energy savings

Maximum energy efficiency and cost savings to improve sustainability are focus areas for Steinbacher. Mr Markus Brandstätter says, "Previously 20-30% of the packaging was done using heat shrink. This is now replaced by RoRo StretchPack® packaging. By direct comparison between our previous packaging solution and RoRo StretchPack® packaging, overall we have reduced energy consumption by about 50% on the packaging line".

Film consumption is also an important parameter in relation to both cost and sustainability. Steinbacher is monitoring the film consumption per pallet. Even though that Steinbacher has gone from 4-sided to 6-sided packaging, they have got a film reduction per pallet by using RoRo StretchPack®.

Mr Markus Brandstätter adds: "Now that we have become familiar with the new packaging line, we will optimize the process to further film reductions."

A structured project process

"Summarizing the project process went very well from the first contact till installation and commissioning", Mr Markus Brandstätter states, "It was a structured process with good communication with Tentoma. We had fixed monthly meetings, and later fixed weekly meetings when the FAT (Factory Acceptance Test) approached. Both the FAT and the installation were well planned and executed".

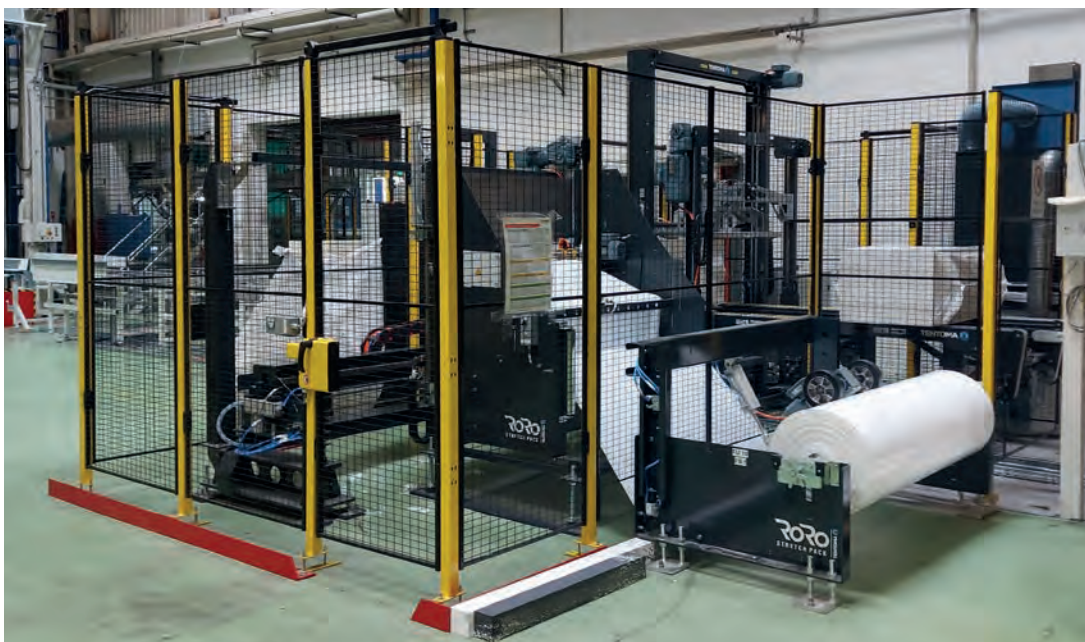
In connection with the installation, Tentoma trained three employees from Steinbacher as key users on the new packaging line. Mr Markus Brandstätter concludes, "After the introduction, our employees felt confident with the new packaging line. We are satisfied with the capacity and the packaging quality of the new RoRo StretchPack® packaging solution".



Production manager, Mr Markus Brandstätter: "We are satisfied with the capacity and the packaging quality of the new RoRo StretchPack® packaging solution".

Benefits for Steinbacher Dämmstoff GmbH

- 6-sided packaging and waterproofness
- Improved and uniform satisfied quality
- Removed heat shrink from the packaging
- 50% energy savings on the packaging line
- Automation and reduced number of processes in the packaging line



The packaging line at Steinbacher Dämmstoff GmbH in Erpfendorf, Austria.

Sandwich panel packaging

Ruukki

Alajärvi, Finland



Ruukki has installed a new packaging line at the Alajärvi plant in Finland for the packaging of up to 13.5 m long sandwich panels. The new RoRo StretchPack® packaging solution has increased the capacity by 40% while the packaging watertightness has been improved.

At the plant in Alajärvi, Finland, Ruukki is producing sandwich roof and wall panels. The panels are produced in different sizes and lengths up to 13.5 m. The packaging line is an important part of the production, so a thorough investigation was done before Ruukki decided to replace their previous orbital stretch wrapper with a RoRo StretchPack® solution from Tentoma.

Improved and waterproof packaging

The requirement for better watertightness was the main reason why Ruukki was looking for a new packaging solution. Esa Lehtimäki, who is the portfolio manager for the Building Envelopes business area at Ruukki Finland tells: "Our sandwich panels are used for large building



On 11 specialized manufacturing sites, Ruukki makes steel-based products for walls and roofs for both commercial buildings and private homes.

projects, and they are often the last elements to be installed. Because of delays in the building projects, the panels are sometimes stored for a long time on the construction site, where they are exposed to different weather conditions. Moreover, the panels are transported on open trucks." He explains, "We have earlier experienced that due to pressure from the wind during transport, sometimes water ingresses between the film layers from the orbital wrapper. It was especially in heavy rain the water started to penetrate the packaging. We want our panels to have the most optimal condition when they are going to be installed". These issues have been eliminated with the new packaging line. Instead of using multiple layers of 60 cm wide wrap film to cover the panels, the new RoRo StretchPack® solution uses one long tubular stretch hood film to cover the whole panel package. It provides full waterproof single-layer packaging with a strong short waterproof sealing on each end.



The new packaging is tight, and with logo printed on the film.

Increases packaging capacity by 40%

Installing the new packaging machine was also an opportunity for Ruukki to optimize all processes around the line to reach the most efficient packaging flow. Esa Lehtimäki says: "Previous there were two processes on the packaging line: First, each end of the sandwich panels was covered by a separate piece of film. Secondly, the panels were packaged by the orbital wrapper. Now we only have one process, because with RoRo StretchPack® packaging and sealing are done in the same operation. This has given us an improvement of the capacity on 40%, which has removed the bottleneck on certain product types."

Another benefit is that the time being used to change film rolls has been reduced significantly. The RoRo StretchPack® machine can use film rolls with a larger roll diameter, which means that with the currently selected film thickness each roll contains 2,5 km of film. Ruukki now only needs to change film once a week, in contrast to earlier, when Ruukki had to change film roll once or twice each day.

The new RoRo StretchPack® solution has also led to a reduction in both film and energy consumption. Ruukki has a sustainability strategy, to reduce the CO₂ emission from processes at Ruukki by at least 25% in 2026. The new packaging line meets this requirement.

Packaging samples on 1000 km road trip

In the initial project phase, Tentoma did test packaging of the sandwich panels in Denmark, which were shipped to the Ruukki plant at Alajärvi in Finland. Esa Lehtimäki says: "We decided to test the packaging and the film quality, so we punched a hole in the film on one of the samples and loaded it on an open truck. The hole in the film was positioned in the front of the truckload, so it was exposed to the wind while driving. The purpose was to test the tear resistance of the tubular stretch film under difficult conditions. The truck drove 500 km up north to our site in Rovaniemi close to the arctic circle. In Rovaniemi, the panels were reloaded on another open truck and returned another 500 km to Alajärvi." After returning to Alajärvi the packaging was still intact, and the punctured hole had not torn itself larger. Ruukki has also sometimes experienced that the film from the orbital wrapper was tailing during transport. This problem is eliminated when using a tubular stretch hood film for packaging.

A stack of Ruukki sandwich panels is packed and sealed in one operation with the RoRo StretchPack® machine. Ruukki does not need an extra process to cover the panel ends anymore.

Esa Lehtimäki, portfolio manager at Ruukki Finland says: "...with RoRo StretchPack® packaging and sealing are done in the same operation. This has given us an improvement of the capacity on 40%, which has removed the bottleneck on certain product types."



A short and efficient project process

Esa Lehtimäki who has been running the project is happy about the process. "To avoid major obstacles, we had a weekly online meeting with the technical project manager from Tentoma. The ongoing dialogue was a great help to ensure a smooth installation process. The only issue was that we realized that Tentoma had to lower the height of the machine to fit the conveyors at Ruukki's plant. It was corrected before installation and didn't cause any delays". Finalizing the physical installation of the RoRo StretchPack® took 2-3 days. It took some more days to align and adjust the packaging process with the production line. A service engineer from Tentoma was present at the plant all the time to support and train the key users.

Esa Lehtimäki concludes, "From Ruukki's side we are satisfied with the new packaging line. Honestly, it went better than I expected because it was in the middle of a challenging time due to the corona crisis. From we contacted Tentoma, until the final installation of the new packaging line it took only a year."

Benefits for Ruukki

- Improved and waterproof packaging quality
- Increase in packaging capacity by 40%
- Reduced number of processes in the packaging line
- Reduced CO₂ emission by min. 25%
- Branding opportunity on printable packaging film
- Better safety



About Tentoma

Tentoma was established in 2011 by Mr. Frank Bruhn, focusing on servicing the vertical stretch hood industry. Building upon these experiences, Mr. Frank Bruhn developed the RoRo StretchPack® technology, for horizontal packaging using a tubular stretch hood film.

Today, Tentoma is a specialist in developing and producing RoRo StretchPack® packaging solutions, targeting the 6-sided packaging for large products, nonwoven rolls, building materials and others.

Operating from Denmark, Tentoma A/S offers global installation and comprehensive support for RoRo StretchPack® packaging solutions.



Selected references:



Watch RoRo StretchPack® in operation:
www.tentoma.com/videos

