möllers

North America, Inc.

Pack ◆ Palletize ◆ Protect

Complete Systems from One Source

Pack

Pneumatic & Impeller Type Packers and Automatic Bag Placing Systems for Valve Bags

Palletize

Conventional and Robotic Systems to Handle up to 50 Bags per Minute

Protect

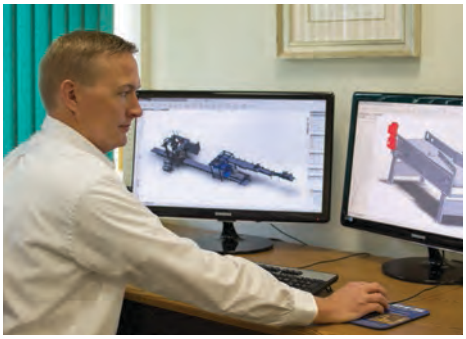
Stretch-Hooding and Shrinkwrapping Systems to Provide Five-sided sealed protection and superior load unitization

For over 40 years, in thousands of installations around the world, Mollers has set the standards for bag and unit load material handling systems. Mollers systems are known for their rugged durability and trouble-free operation, in the most demanding applications.

Our equipment's performance is the result of a history of engineering excellence and our dedication to the highest quality standards in manufacturing and customer satisfaction. From the first drawing, through installation and start-up, every process and procedure in our facility is designed to ensure the highest quality standards.

Our quality standards are evidenced by:

- The latest CAD technology.
- CNC controlled machining equipment to ensure accurate tolerances.
- Certified AWS welders, to provide consistent, high quality welds.
- Touch-screen systems interface for ease of operation, simplified training and optimum flexibility.
- Assembling and testing each system before it leaves our facility to ensure quality and simplify installation in your plant.
- A rapid response service team and complete parts inventory to minimize downtime.

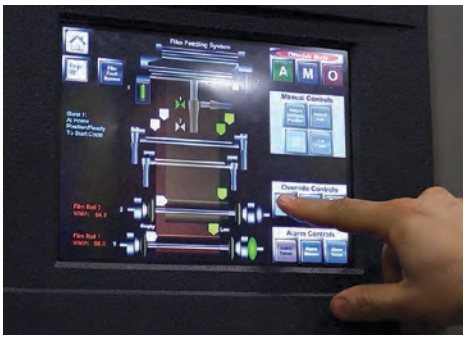


We design each system using the latest in CAD technology.

CNC controlled machining equipment ensures complete precision.

AWS certified welders produce consistently high quality welds.

In our more than 100,000 square foot facility, centrally located in Grand Rapids, Michigan, Mollers designs and builds each system.



Touch-screen interfaces simplify operation while optimizing flexibility.

To ensure quality, we assemble and test each system before it leaves our facility.

Our rapid response service team keeps potential downtime to a minimum.

Impeller Packing Systems

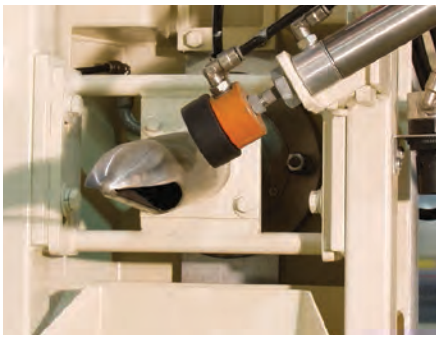
Impeller packers are ideally suited for powdered products of all kinds, including talc, cement, gypsum, lime, sand and other products.
A horizontally mounted, motor-driven rotary impeller fills the bags. Packing, weighing and bag discharge functions are fully automatic.

Each system comes with an electronic weighing system, a separate controls box, and a display screen with key pad to change bag size, weights or other bagging parameters. Packers are designed to be fed by an automatic bag placer and can be configured as single units or set-up four in-line.

Throughput is 3 to 5 bags per minute, per spout, depending on product handled and bag size.

Features of Mollers impeller packers include:

- Suitable for most powdered products
- Handles either paper or plastic valve bags
- Completely automatic operation
- Integral electronic weighing system
- Designed to work with an automatic bag placer
- Separate control box



Nozzle with bag detection device.

Up to four in-line spouts per bag filling cell.

Independent control of each filling spout ensures accurate weight tolerances.

Pneumatic Packing Systems

Pneumatic packers can handle granular, as well as powdered products, including chemicals, building materials and food products. Products handled can be as fine as powdered milk and pigments, to as coarse as grain and animal feed.

The product being bagged is fluidized at the chamber base and blown into the empty bag. Packing, weighing and bag discharge functions are fully automatic.

Throughput volume is high, with rates of 4 to 8 bags per minute, per spout, depending on product handled and bag size. Packers come complete with an electronic weighing system that can be adjusted to coarse- and fine-flow settings, to improve accuracy and reduce filling time.

Features of Mollers pneumatic packers include:

- Suitable for both powdered and granular products
- Handles either paper or plastic valve bags
- Completely automatic operation
- Integral electronic weighing system
- Designed to work with an automatic bag placer
- Separate control box

Bags are automatically placed over the nozzle for filling.

Four in-line packers are controlled independently within the main control panel.

Stainless steel hopper has quick disconnect fittings and drop-down bottom for easy cleaning.

Traversing Arm Valve Bag Placer

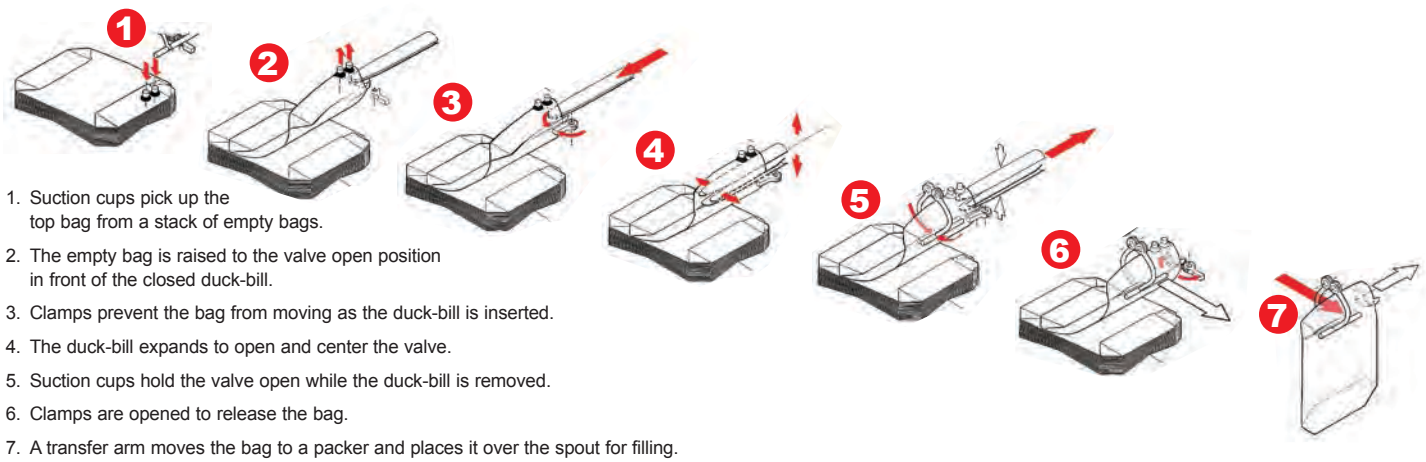
Mollers' Valve Bag Placer automatically places paper or plastic valve bags on up to four in-line spouts at a maximum rate of 1,080 bags per hour. The Placer uses an expanding duck-bill to open and center the valve prior to placing the bag on the spout. Pre-opening the valve assures quick and reliable bag filling on a wide variety of bag sizes.

Each Valve Bag Placer system is engineered to meet your specific requirements and includes an empty bag magazine, which holds up to 300 empty bags and a floor standing Control Panel. The Valve Bag Placer can be located on either side of the Packer.

Features of the Mollers valve bag placer include:

- Handles either paper or plastic valve bags
- Completely automatic operation
- Handles a variety of bag sizes
- Throughput of 900 to 1,080 placements per hour, depending on configuration and bag size
- Feeds up to four packers

Conveyorized bag feeder provides a steady supply of bags to the packer.



1. Suction cups pick up the top bag from a stack of empty bags.
2. The empty bag is raised to the valve open position in front of the closed duck-bill.
3. Clamps prevent the bag from moving as the duck-bill is inserted.
4. The duck-bill expands to open and center the valve.
5. Suction cups hold the valve open while the duck-bill is removed.
6. Clamps are opened to release the bag.
7. A transfer arm moves the bag to a packer and places it over the spout for filling.

High-Speed Robotic Valve Bag Placer

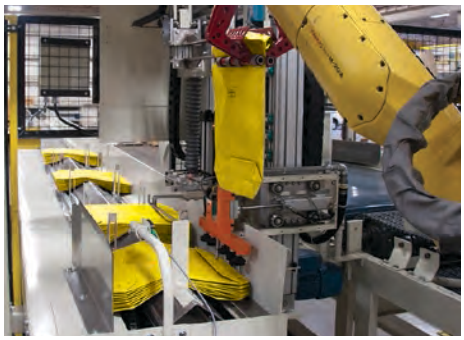
Mollers North America has partnered with Motoman, a subsidiary company of Yaskawa Electric Corporation, the world leader in robotics to produce a world class Robotic Valve Bag Placer. The system is built around Motoman's new six-axis SSA2000 "Super Speed" robot and Mollers' proven bag magazine/delivery system.

Mollers Robotic Valve Bag Placer automatically places paper or plastic valve bags on up to 4 in-line spouts at a maximum rate of 1200 to 1500 bags per hour. The placer uses an expanding duck-bill to open and center the bag prior to the Robot gripper grabbing and placing the bag on the spout. Pre-opening the bag assures quick and reliable bag filling on a variety of bag sizes.

Each system is configured to meet your specific requirement and includes an empty bag magazine/delivery system, which holds up to 300 bags.

Features of the Mollers valve bag placing robot include:

- Handles paper or plastic bags
- Handles a variety of bag sizes
- 54.25" reach, and ± 0.003" accuracy
- Industry-leading one-year robot cable warranty
- Throughput of up to 1,200 to 1,500 bags per hour depending on configuration and bag size
- Feeds up to 4 packers
- Complete automatic operation



High capacity bag magazine automatically feeds bags without interrupting the filling process.

The robotic arm secures the bags from the duck-bill while maintaining open valve position during transition to filling spout.

An optional pressurized suit is available to accomodate different environmental area requirements.

PLS High-Speed, Split-Plate Palletizing Systems

PLS palletizers are modular in design, so that they can be configured to meet the operational needs of your facility. Units can be engineered with a selection of bag positioning devices and pusher arms, to meet throughput requirements of 1,500 to 3,000 bags per hour.

PLS systems can handle any pallet size and any stacking pattern; that's why you find them in a wide variety of industries, handle everything form building materials and pet food, to plastic pellets and ice cubes.

Features of the PLS Split-Plate Palletizing System include:

- An independent layer compressing plate flattens the surface of each layer, providing maximum load stability.
- A split sliding plate minimizes friction on each layer.
- Standard empty pallet magazine (20 empty pallets) and loading conveyor.
- A full pallet pick-up station simplifies pick-up of completed loads.
- Pallet elevator with counterweight.
- A number of additional options are available, such as glue systems, slip sheet dispensers, air tables, check weighers, metal detectors, bag marking systems, reject stations, and empty pallet storage zones for 60 pallets or more.

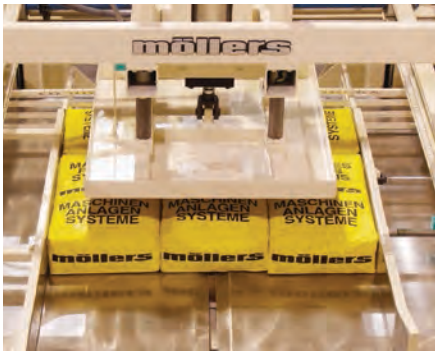
Automatic reject station kicks out under and overweight bags.

Bag flattener elevator flattens and elevates bags in reduced floor space.

Bag equalizer flattens air-tight, sealed bags.

The standard empty pallet magazine holds 20 empty pallets.

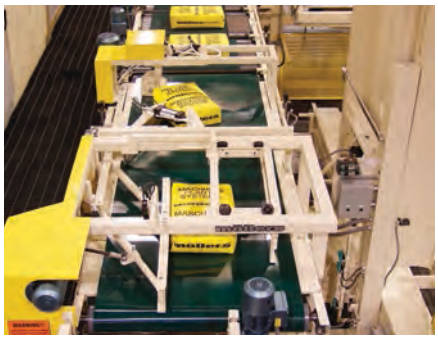
Slip, intermediate and top sheet dispensers are available.



Layer squaring system and independent layer compressing plate square and flatten each tier.

Pop-up turning device handles up to 25 bags per minute.

Overhead flap turning device handles up to 30 bags per minute.



Bag turning post handles up to 50 bags per minute.

PFS Floor-Level Modular Palletizing Systems

The space-saving PFS Floor-Level Modular Palletizing System provides the advantages of automatic palletizing to businesses with lower throughput requirements. And like its counterpart, the PLS system, it can accommodate any stacking pattern that you may require.

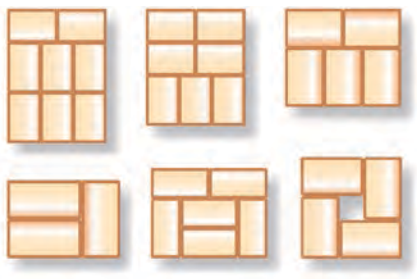
Each PFS palletizer is composed of independent modules, enabling it to be configured to fit virtually any space requirements. Because of its modular design, the PFS also enables you to easily add auxiliary devices.

Features of the PFS Floor-Level Modular Palletizing System include:

- Low infeed height for easy monitoring.
- Standard empty pallet magazine (20 empty pallets) and loading conveyor.
- Pop-up turning device with variable frequency drive.
- Counterweighted slide plate elevator with high capacity variable frequency drive.
- Timing belts and timing pulleys everywhere possible
- Pre-engineered bag turning devices, roller or belt tables, and loading stations that can be added to suit your application.

Technical specifications:

- PLC operation including modem
- Touch screen operator interface
- Full diagnostics
- Capacity, up to 15 bags/minute (900 bagshour)



Each of our palletizing systems can be programmed to stack pallets in a variety of patterns.

The PFS palletizer's modular design allows bag in-feed and pallet out-feed conveyors to be configured to fit any flow requirement.

An optional bag cleaning device removes dust and debris from bags prior to palletizing.

PFS Floor-Level (Dual Line) Modular Palletizing Systems

Functional Features

- Palletizes two product lines with one palletizer simultaneously
- Provides layer squaring and layer compression to product tightly cubed load stacks
- Each line accumulates one layer's worth of product, and pallet stacking is alternated between each product line one layer at a time
- Capacity is 5 to 6 bags per minute per line (10 to 12 bags per minute combined)

A complete array of palletizing accessories

Palletizing often involves preparatory procedures, and in other cases, you may want to accomplish complementary functions. Mollers palletizing systems are supplied with all the accessory equipment you may need to accomplish your packing goals. System accessories include metal detectors, check weighers, bag flatteners, glue systems, slip sheet dispensers, bag marking systems, and other equipment.

Heavy-duty turntable live roller with all rollers chain driven.

A pivoting conveyor feeds accumulated product from multiple lines into the dual stacking palletizer.

Side reject station automatically removes bags that do not meet proper tolerances.

Roller/chain transfer for proper load flow orientation.

PRS Robotic Palletizing Systems for Bags

Mollers' Robotic Palletizing Systems are designed for low-volume bag & carton palletizing applications in a wide range of industries. Robotic palletizers can easily be integrated with Mollers automatic bag-filling equipment, stretch hooding or shrink-wrapping systems to provide an integrated system solution that meets the customer's needs.

Robotic solutions provide exceptional operational flexibility and can build multiple pallet loads of different products simultaneously; handle a variety of product sizes, shapes and weights; and can be quickly re-programmed to handle new or changed load requirements.

Features of the Robotic Palletizing System include:

- Fully automatic operation
- Application specific custom grippers
- Controller can manage up to four robots and features pre-loaded application software with Touch Screen operator interface
- State of the art safety equipment complies with both ANSI/RIA R15.06-1999 and Canadian safety standards
- Graphical User Interface (GUI) expedites troubleshooting, training and changing operational parameters
- Robotic systems can service multiple in-feed lines and handle a variety of product sizes, shapes and weights simultaneously
- All electrical and pneumatic lines are run inside the robotic arms for maximum protection
- Robotic systems can be configured to meet most floor plan limitations

Teach pendant offers full and convenient system control.

Pallet lock feature secures the pallet during stacking.

Adjustable grippers handle multiple bag configuratrions.

PRS Robotic Palletizing Systems for Cases

Technical Specifications:

Product Dimensions
Width: 9” to 24”
(230 to 585 mm)
Length: 12” to 48”
(330 to 990 mm)
Thickness: 1.5” to 24”
(40 to 150 mm)
Weight: up to 176lb
(80kg)

Pallet Load Dimensions
Length and width: up to 60”X 72”
(1525 X 1830 mm)
Height: up to 104” (2640 mm)

Throughput
Up to 20 placements per minute, depending upon product and pallet size

Pneumatic
Operating pressure: 90 psi
Air consumption up to
6 scfm (170 Nl/min)

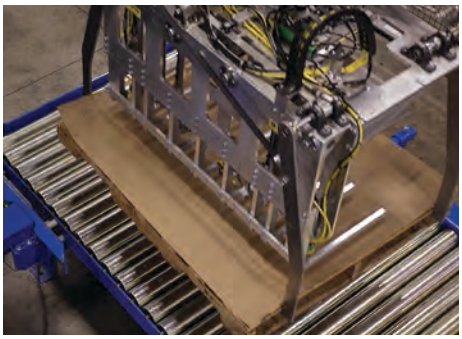
Electrical
460V / 3Ph / 60Hz

Payload Capacity
Up to 176lb. lbs. (80kg)

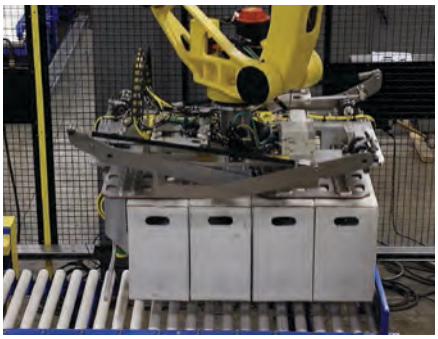
Fanuc: Mollers Robotic Partner

For more than 60 years, Mollers products have been known for their rugged design, long life and high quality standards. Fanuc meets those same standards of excellence and has earned a reputation as the global leader in robotic technology, with facilities and installations around the world. The selection of Fanuc as our robotics partner will allow us to provide our customers with integrated systems solutions from a single source, when robotics are the optimum solution for the application.

Robotic arm positions tie-sheets between layers to improve load stability.



Robotic arm accurately positions pallets onto conveyor for case positioning.



Adjustable grippers accomodate varying case configurations.

Side by Side Comparison

Shrinkwrapping or Stretch-Hooding Systems		Stretch Wrapping Systems
✔	*Offers complete five sided protection to avoid water seepage*	☐
✔	*Improves unitization by affixing the load to the pallet with film*	☐
✔	*Reduces valuable handling time by offering a faster application rate*	☐
✔	*Offers flexibility by incorporating a "sleeve" option for added reinforcement*	☐
✔	*Avoids "unraveling" throughout the handling/distribution process*	☐
✔	*Offers the option of having marketing message printed on the film's surface*	☐
✔	*Improves brand equity by allowing pallet load content to be easily viewed through a single film layer*	☐

Stretch-Hooding or Shrinkwrapping can accommodate a wide variety of applications:

Building Materials

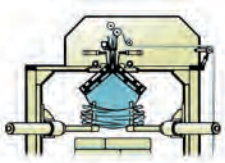
Boxes

Bags

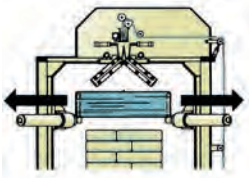
Pails and more...

Stretch-Hooding and Shrinkwrapping can provide an under pallet wrap, which unitizes the load to the pallet.

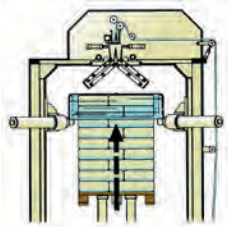
The Stretch-Hooding process:



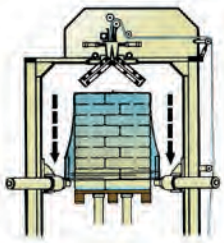
1. Tensioning fingers take up the unstretched hood.



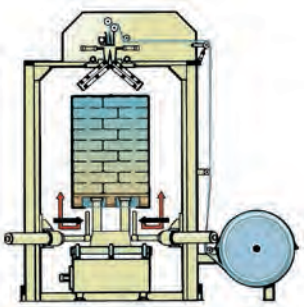
2. Tensioning fingers pull apart, stretching the hood.



3. The pallet load is raised.

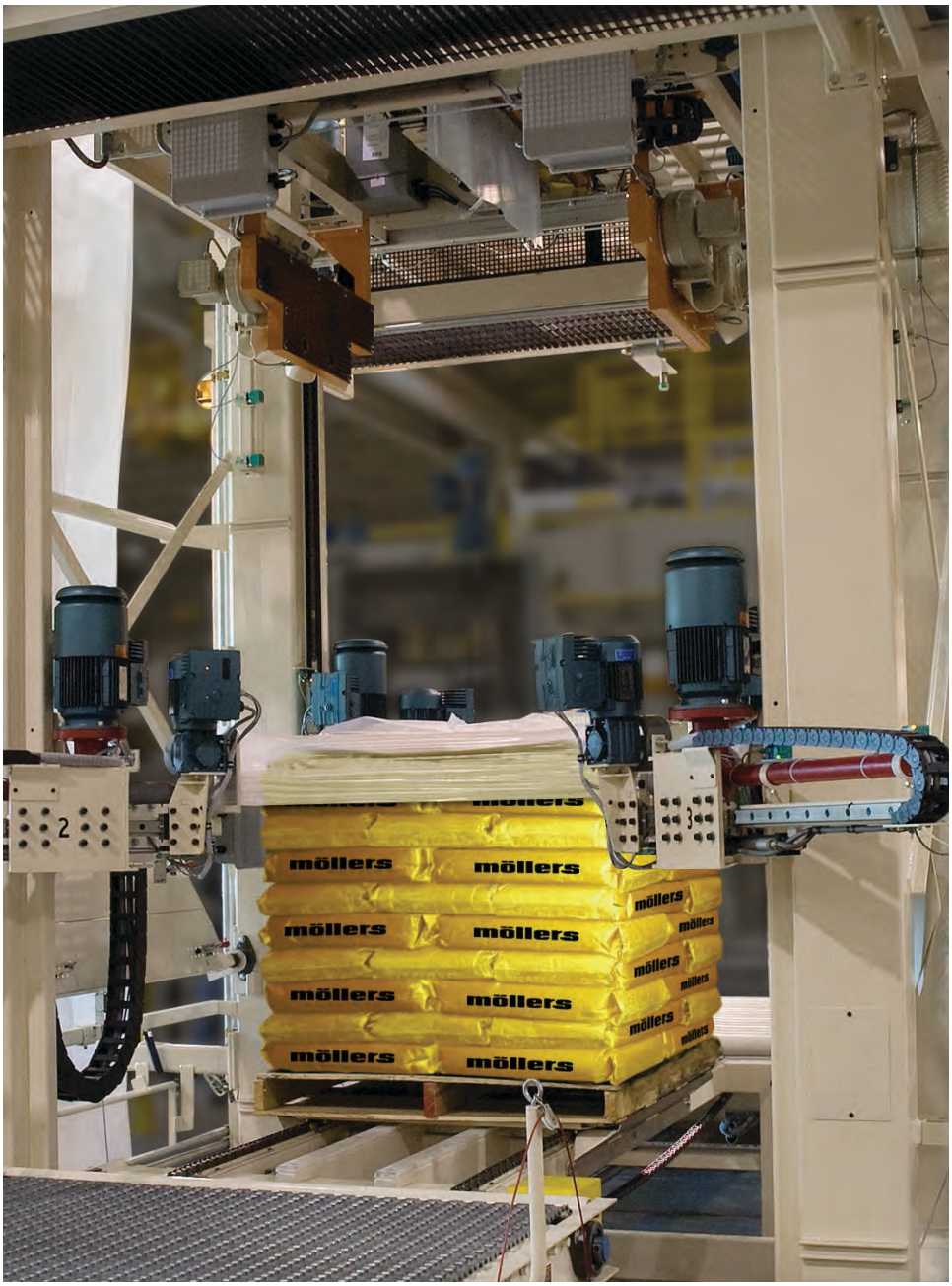


4. The hood is pulled down over the load.



5. The hood is stretched under the pallet to secure the load.

HSA Automatic Stretch-Hooding Systems*



*U.S. and other patents

Protecting palletized loads using stretch film is a reliable, cost-effective alternative to shrinkwrapping. The one-piece hood is stretched over the pallet load to tightly secure it, without heat. As a result, you save the cost of energy and reduce the environmental impact.

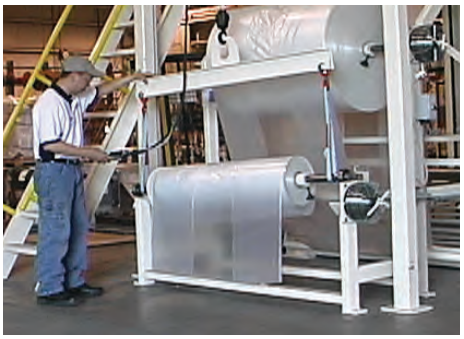
The stretch hood forms a smooth-surfaced envelope which is dependably watertight, and can also act as a surface for advertising messages.

Features of the HSA Stretch-Hooder include:

- Hoods are made from a supply reel of gusseted tubular film, measured, heat-sealed and cut to the proper length.
- An optional height scanning device selects the required film length, to allow handling of mixed load heights automatically.
- A capacity of up to 120 pallet loads per hour can be achieved.
- Handle a wide range of load sizes, up to a maximum size of 48” x 120.” (Please consult factory for other sizes.)
- Adjustable stretch arms can automatically accommodate a wide range of load sizes and shapes (square to rectangular).

Control pendant with vertical and horizontal movement.

Splicing table with clamps folds down allowing fast and easy film roll splicing.



Hoist and dual film roll option.

Film roll hoist features support beam with straps to secure film roll.

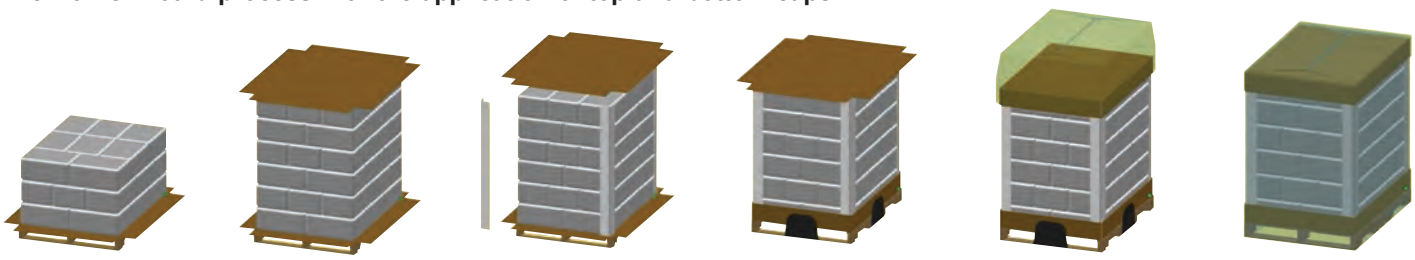
HSA/CBC Automatic Corner Board System with Top & Bottom Caps

The Mollers North America Corner Board System automates the process of placing four corner boards with top and bottom caps to a wide variety of load types unitizing and securing the load to the pallet with a stretch-hood. The base design of the system includes adjustments, allowing the system to automatically accommodate a range of loads sizes simultaneously.

- The corner board magazine has a carousel design, allowing for multiple magazine cartridges of corner boards
- Each magazine cartridge can hold up to 30 corner boards
- The multiple magazine cartridges can accomodate corner boards of varying sizes for a wide range of palletized loads
- Carousel rotation is controlled with servos, allowing for precise positioning during corner board retrieval and for proper staging
- The pivoting corner board placing arms are servo controlled for rotational and linear movement
- A mechanical clamping device secures the corner board from the magazine, and a 'pivoting wrist' aids in the precise positioning
- Placement function can be accomplished within 'trained mode' (recipe driven) or 'discovery mode' (fully automatic)
- The pivoting corner board placement arms are retracted after the corner boards are secured at the base with the flap folding system and at the top by the stretch-hood

US Patent #: US 8,938,934 European Patent #: EP2608953B1

The Corner Board process with the application of top and bottom caps:



1. Palletize load onto a bottom cap sheet.
2. Apply top cap sheet onto the load.
3. Lift top cap sheet and apply corner boards.
4. Fold bottom cap sheet flaps and re-apply top cap sheet.
5. Apply stretch-hood and retract corner board placing arms.
6. Complete stretch-hood application and retract lower flap bending plates.

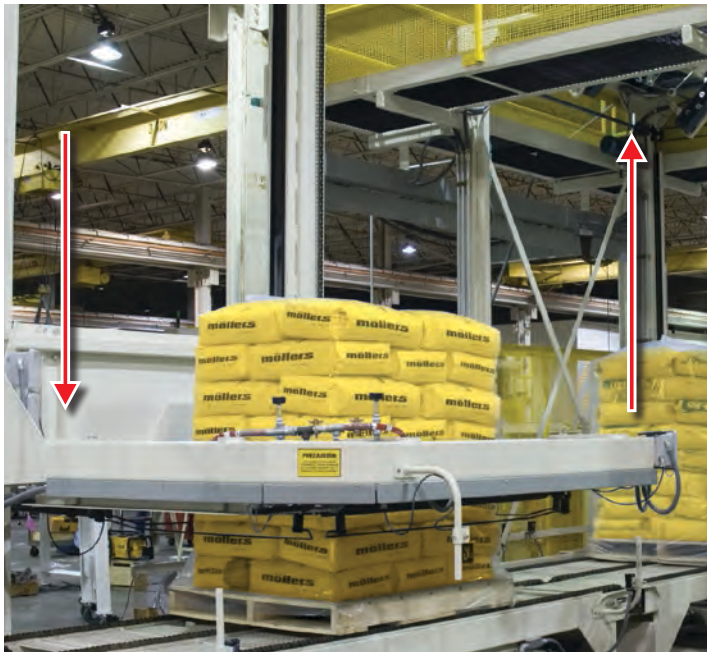
FSA Film Placing Station

Shrinkwrapping has proven to be a highly effective and adaptable method of protecting and securing a wide variety of unit loads during shipping. Mollers shrink and stretch film systems are ecologically and economically sound ways to protect loads.

Features of Mollers Film Placing station include:

- A height detector measures the load to automatically size the hood accordingly.
- Hoods are made from a supply reel of gusseted tubular film; hood length is adjustable to suit the load height, reducing material waste.
- Patented non-contact system for film guidance prevents displacement of light packages or damage to the film and corners of the load.

ASF Film Shrinking Station

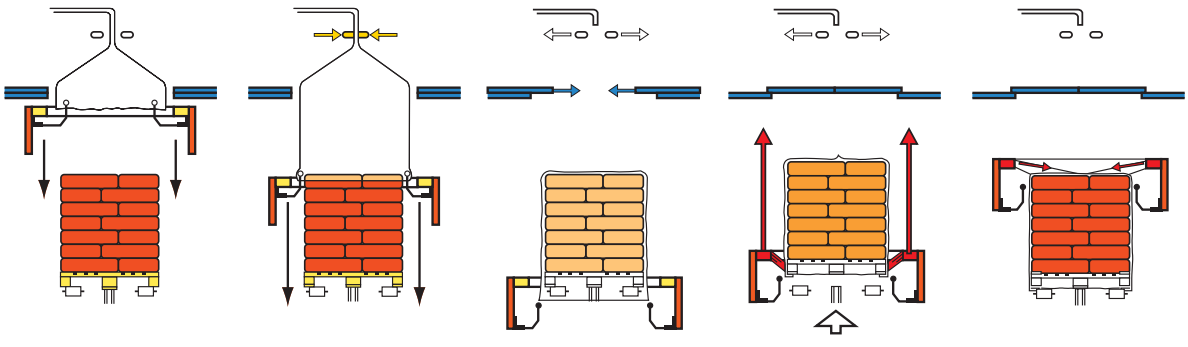


Depending on your working environment, Mollers shrinkwrapping systems are available with either electric or gas heated shrink frames. Electric shrink frames are ideal where gas shouldn't be used for safety reasons.

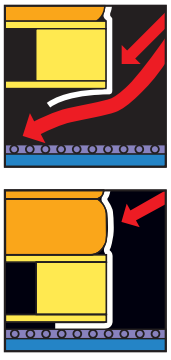
Features of Mollers Shrinkwrapping station include:

- A hydraulic elevator raises the pallet load which allows the film to achieve the under pallet shrink.
- Under-pallet shrink reinforces the bond between the load and the pallet, increasing stability.
- System can handle 60–80 loads per hour.
- Shrink film can be changed in less than five minutes.
- Shrink frame can be adjustable to accommodate varying load sizes.

Film Placing and Shrinkwrapping process:



1. Load size is measured and film is opened and placed onto tensioning fingers.
2. Required length of tubular film is withdrawn. Film is cut and sealed to form a hood.
3. Tensioning fingers lower hood onto the load with the patented, non-contact placement method.
4. Load is positioned into the shrink-wrapping station; the load is raised and the shrink frame is lowered to evenly shrink hood.
5. Shrink frame in top operating position allows the shrinks the upper surface of the load and the process is complete.



Detail of under pallet shrink process.

Automatic Load Stacking System

Realize operational efficiencies with the automatic load stacking system. For your end-of-line load staging requirements, the system will stack multiple loads to reduce your handling time. Constructed of heavy duty structural steel and a robust fork lifting system. Designed to accomodate a wide range of load sizes. The retractable fork with physical backstop design ensures proper load alignment. Comprised of like components with other Mollers equipment.

Functional Capabilities include:

- Stacking loads that are stacked onto pallets
- Stacking loads that are stacked onto slip sheets
- Stacking multiple partial loads
- Inserting pallets beneath loads

Load stacking system for pallets.

Load stacking system for slip sheets.

Load stacking system for partial loads.

Pallets insertion beneath loads.

Minimizing your downtime is critical, and everyone at Mollers North America understands and appreciates that. We take great pride in providing the best service in the industry.

We've built our reputation by exceeding the needs of our customers… The entire Mollers North America Team is committed to making your business better.

Customer Service

- 24/7 Support for the life of your Mollers equipment
- Expert Field Service Technicians available to be on site within 24 hours in most instances
- Turn-Key installations with hands-on operator training
- FREE 24/7 technical phone support

Remote Support

- Dedicated team for remote troubleshooting
- Capable of connecting directly to your field equipment via Modem, Ethernet or VPN for system monitoring troubleshooting
- Using the M-Promise Tablet Device, real time video streaming capability takes remote support to a higher level

Spare Parts

- Mollers maintains on-hand inventory for critical items
- Most items ship within 24 hours – if an order is received by 4pm EST, the item will be shipped the same day arriving the following morning
- Receive and Process orders 6 days a week
- M-Parts provides on-line ordering at a 5% discount

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