

THERMOFORMING MACHINES

www.inpakmakina.com







Building Trust Continuous Partnerships

· Enabling 24/7 machine running to produce packaging at their best

- · Longer lifetime in its range with ability of providing minimum production cost per product
- ·Keeping the high performance and real efficiency (OEE) through the machine lifetime



INPAK is a globally trusted and locally impactful engineering company specializing in high-performance multi-station thermoforming machines. Our solutions are engineered for optimal performance, combining advanced technology with energy efficiency to help customers maximize output while minimizing operational costs. With a focus on long-term value, INPAK supports sustainable growth in the packaging industry through reliable engineering solutions.

Thermoforming Machines

Key Systems and Features	Function and Purpose
Control Systems	
INPAK Software	Enhances operational stability and ensures consistent performance.
B&R Industrial PC	Provides a reliable and efficient platform for machine control.
B&R 18.5" HMI Touch Screen	Offers an intuitive and responsive interface for seamless user interaction.
Servo Systems	
Regenerative B&R and SEW Servo Systems	Improves energy efficiency and supports dynamic system performance.
B&R Servo Drivers	Enables precise and accurate control of machine movements.
Film Feeding Systems - Chain & Rails	
Servo-driven IWIS Chains	Ensures accurate film positioning for sequential processing.
Adjustable Water Cooled Raid Distance	Allows precise film aligment and flexibility for various sheet sizes.
Heating Technology	
Elstein Infrared Black Ceramic Heaters	Delivers uniform, energy-efficient heating across the film surface.
Variable Heating Control Systems	Provides customizable heating control for optimal performance.
Thermoforming Process	
MAC Air Valve	Provides robust responsiveness for precise air flow control.
Busch or Schmalz Vacuum Systems	Ensures efficient vacuum generation while forming products.
Servo-driven Plug Assist	Ensures consistent, high-quality products with controlled material distribution.
Mechanical Design	
Motion Stabilizer	Compansates for backlash between the nuts and shafts during group motion.
Needle Bearings in Toogles	Enchances durability and ensures smooth operation gapless joints.
Lubrication System	
Beka-Max PC-Controlled Automatic Lubrication	Reduces wear and extends maintenance intervals with automated lubrication.
Pneumatics	
Festo and SMC Pneumatic Components	Ensures reliable, long-lasting pneumatic performance across all applications.
Bearings	
SKF, FAG and INA Bearings	Provides exceptional durability for continuous performance.
Electrical Components	
Schneider, ABB, Weidmüller, Eaton and Sick Equipment	Deliver high-quality electrical solutions for optimal, efficient machine operation.

INPAK currently operates in a 6,000 m² production facility with an annual capacity of 50 machines and continues to grow in line with rising global demand. With exports to 50+ countries across 6 continents, INPAK provides reliable engineering solutions through its dynamic and experienced team. Customer satisfaction remains at the core of our approach – building trust through unmatched reliability, rapid after-sales service, technical consultancy, and ongoing support. We believe in continuous partnerships built on mutual growth and the ability to evolve with our customers' needs.

Key Machine Features





Machine Comparison Table

GENERAL	TS-800 TSR-800		TS-850	In-Mould Cutting	TS-1000		
Maximum Mould Dimensions	800 :	x 580	800 x	¢ 650	1000 x 750	mm	
Max. Sheet With	84	40	890 1050		1050	mm	
Maximum Sheet Tichkness	150		μ				
Cycle Speed Max. (Dry Cycle)		70	cpm				
Air Pressure	6 Bar						
Vacuum Pump		140	m3/h				
Upper / Lower forming depth	135/135 mm						
Power Consumption		40-75	kW				
Total Installed Power		190-220	kW				

Inpak Thermoforming Machines

Inpak machines are engineered for reliable and efficient thermoforming, specializing in food packaging. They process materials such as PET, CPET, PP, PVC, PS, OPS, and PLA with consistent cycle speeds, effective compressed air and vacuum performance, and manageable material distribution through optimized heater setups and machine mechanics. These machines accommodate various mould sizes and sheet widths, handling plastic films up to 1.5mm, offering flexibility for diverse production needs. With optimized power consumption, Inpak's solutions provide energy-efficient and dependable performance. Supported by Inpak's comprehensive service, including installation, training, and after-sales assistance, these machines ensure smooth operation and low maintenance. Inpak stands for unmatched reliability, delivering fast ROI, consistent quality, and performance every time.



Add-On Features & Integrated Services



Mould Manufacturing

We offer end-to-end support from product design and prototyping to complete mould construction. Our moulds are engineered to fully leverage Inpak machine capabilities, ensuring optimal performance and maximized product quality.



Low-Level Product Handling Conveyor Unit

Designed to enhance working ergonomics and space efficiency, these units lower stacked products to 90 cm from floor level for easier handling. Available in linear or rotational formats, conveyors can be directed either toward the operator or the rear of the machine to suit various layouts.



Custom Developments & R&D Integration

Our dynamic R&D capabilities provide integrated solutions and tailored modifications to meet unique customer requirements, helping clients stay ahead with timely market delivery. Let us know your needs!



Material Jnwinder System



- Roll lifting system Hydraulic
- Able to work with double roll
- Motorised unwinder with pneumatically supported rollers
- Analog controlled, non-stop roll opener
- Alternative unwinder options for variable roll diameters
- Can take plastic film directly from an extruder instead of from a roll

Pre-Heating System



This oven allows PP film to soften and expand before entering the thermoforming machine's standard heater setup, reducing distortion and sagging. Otherwise, the rapid heating process can cause excessive sagging, even with longer heater tray setups, making the film harder to control. Additionally, material stress imbalances may result in uneven wall thickness

15m of preheating system with 30kW hot air circulation capacity
25m of preheating system with 45kW hot air circulation capacity

Film Feeding System Chain & Rails



- Servo-driven transport chains
- Sheet edge heaters (Quartz) at infeed
- JWIS chains
- Water-cooled, aluminum profile chain rails
- Automatic rail distance and sheet stretching system, adjustablevia screen with rotary encoder for precise measurement.
- Automatic chain lubrication PC controlled
- Photocell for pre-printed sheet

Scrap Management



The unused plastic film between mould cavities can be collected for recycling

- Asynchronous winder motor with electronical torque control
- Pneumatic discharging system of scrap
- Scrap rotator feeding into an inline granulator

Heaters

INPAK heating capabilities can work with all thermoformable materials. (Bio-based, fossil-based, biodegradable, compostable, recyclable materials)

Heater tray construction and control configurations are designed for high energy efficiency.



The heaters are black Elstein infrared ceramic heaters with internal insulation, delivering more targeted radiation and achieving 30% energy savings compared to conventional systems

- Infrared temperature measurement on sheet surface
- Double sensor control against sheet sagging
- Individually adjustable (line by line) ceramic heaters in top and lower trays, made of AISI-304 stainless steel.

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Res.3	MD.	401.8											
Real	450	414.1	-										FORMER
Rest	621.0	4044	-										PINCH
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Variable heater configurations are available to meet specific needs.

- Row-by-row control near the forming unit
- Individual heater element control options
- Covering plate at heater infeed

GENERAL	TS-800		TS-850	TS-850		
Length of Heater Tray	180	00	189	90	2260	mm
Upper Heating Power	5	0	6	4	81	mm
Lower Heating Power	5	0	6	4	81	kW



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1. Forming Station

INPAK offers superior thermoforming capabilities with unmatched reliability

- Servo-driven plug assist on top press (optional for bottom)
- Pneumatic clamp frame or plug assist on both top and bottom formers
- Forming by air pressure and / or vacuum
- Motorised lower mould height adjustments (Only for TS-800 and TS-850)
- Tool fixing system with electrical safety interlocks (Only for TS Series)
- Mould centering system
- Flow control sensor for cooling water

What Is Servo Plug Assist?

Servo plug assist is an advanced thermoforming technology that controls the distribution and thickness of plastic films. It uses a servo motor to precisely move a plug, pre-stretching the heated film into the mould for uniform material distribution and accurate part dimensions.



Closing Forces	TS-800	In-Mould Cutting	TS-850	In-Mould Cutting TSR-850	TS-1000	
Forming Station	500	800	500	800	600	kN
Hole Punching Station		600	kN			
Cutting Station		800	kN			

Machine Stations

Machines can be configured as either 3-station (Forming, Cutting, and Stacking) or 4-station (including a hole punching station between Forming and Cutting). The in-mould cutting machine can also be a 2-station system, consisting of an in-mould cutting press and a stacking station.

Common Technical Features in Group Stations:

- 4-Column servo motor-driven groups with independent top and bottom motion control
- Motorised upper mould height adjustments
- Pneumatic weight balancing system
- Long-life, special needle bearings with gapless joints
- Systems for taking up the play between the nuts and shafts whilst in group motion
- Automated lubrication for complete toggle systems

2. Hole Punching Station

A hole-punching station creates holes in the formed plastic using male punches and female blocks, as part of a punching mold combination, for ventilation or other purposes.

- Motorised position adjustment of station with rotary encoder
- Vacuum device for hole punching scraps
- Optional height adjustment in lower hole punching group

3. Cutting Station

This is where the outer shape of the formed product is cut. It uses conductively heated steel rule knives that follow the product's outline, ensuring effective and clean cuts along the edges.

- Motorised precision cutting adjustment on top table by 0,03mm/pulse
- Cutting knife heating (max. 150°C) and insulation plate
- Motorised cutting knives X-Y adjustment system with measurement by rotary encoder
- Motorised position adjustment of station with rotary encoder
- Tool fixing system with electrical safety interlocks
- Optional height adjustment in lower cutting group







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4. Stacking Station

INPAK offers superior thermoforming capabilities with unmatched reliability

- Servomotor driven vertical stacker
- Motorised position adjustment of station with rotary encoder
- Electrically driven out conveyor
- Variable working modes



Stacker Options	Standard Stacker	Servo A-B Stacker	Conventional Stacker & Down Stacking	Fast Robot Stacker	Fast Robot Stacker & Down Stacking	Fast Robot Stacker
Upward Stacking + Sweeping on to the Out Conveyor	+	+	+	+	+	+
Upward Stacking with A-B or A-B-C	+	+	+	+	+	+
Down Stacking with Additional Conveyor System					+	
Robotic A-B or A-B-C Stacking				+	+	
Spacial Stacking for Round Parts						+

4.a Standard Sweeper

Using a servomotor-driven vertical stacker, the cut products are separated from the film while being pushed upward. The stacked and counted products are then swept from the magazine toward an out-conveyor via a pneumatic or servo sweeper, depending on the model.

4.b Servo-driven A-B Stacker & Sweeper

The alternative to the robot stacker, a specialized mechanism that allows for AB/ABC stacking within the upstacker frame magazine. This mechanism utilizes a servo motor to drive the "A" product line under the "B" line. Additionally, another servomotor is employed to transfer the counted stacked products onto the conveyor. This system enables A-B or A-B-C stacking at the actual forming speeds.





Thermoforming Machines

4.c Robot Stacker

The robot stacker is the most versatile option, offering multiple working modes to accommodate different stacking needs. It is an excellent choice for A-B stacking and particularly suitable for short or small products that pose challenges when held within the upper frame walls of a conventional stacker.

Classic working modes:

Robot working modes:

- Sweeper mode
- A-B or A-B-C sweeper mode (Within upstacker magazine)
- Pick and place
- 180° A-B stacking (2 sub-modes)
- 90° A-B stacking (3 sub-modes)
- 2-step A-B stacking (3 sub-modes)
- A-B-C stacking (3 sub-modes)
- Variable Stacking Quantity

4.d Lid Robot Stacker

(with Servodriven Upper and Lower Frame)

The lid robot stacker is particularly useful when the majority of dedicated products for the machine have round cutting geometries. This system allows for better stacking capabilities, enabling the formation of taller stacks. Additionally, with the "W" cavity placements, it is possible to reduce sheet scrap ratios, further enhancing the efficiency with cavity utilization in the mould.

Working modes:

- Classic sweeper mode
- Classic A-B stacking mode (A-B within upstacker frame magazine)
- Round shaped product stacking with lid robot system

4.e Down Stacker

The down stacker is an additional feature that complements the standard upward stacking capability. It is particularly useful for stacking large and thin products, like fruit liner trays. These types of products can be challenging to hold within the upstacker frame magazine. The down stacker is specifically designed to handle such products, making it well-suited for their stacking requirements.





Globally Trusted, Locally Impactful

Reliable engineering solutions across 50 + countries and 6 continents.

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