

THERMOFORMING MACHINES



 **inpak**

WHY INPAK?



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

Vision

Adding value to our partners by providing reliable engineering solutions.

Mission

We develop sustainable business partnerships by offering long-life and efficient thermoforming solutions with our dynamic and experienced team in the plastic and packaging industries.

INPAK currently operates in a production area of **6000 m2** with a production capacity of **50 machines** per year and continues to grow to meet the increasing demand, has exported to **46 countries in 6 continents** so far. Inpak provides reliable engineering solutions to customers with its dynamic and experienced staff.

Inpak has always managed to keep **customer satisfaction** at the forefront by preventing production loss with fast after-sales service, technical consultancy and support.

Having kept in mind technological developments with its innovative perspective, Inpak has been offering **optimum solutions**. Inpak has succeeded in gaining a large market share and has proven itself in many countries with its 24/7 working thermoforming machines.

Reliable Engineering



Longer Machine
Lifetime



Highest Cycle
Speeds



Less Energy
Consumption



Ease of
Use



Increased
Availability

Key Machine Features

- Advanced, ergonomic and easy to use human machine interface and Inpak software
- Ability of remote access to the Inpak machine for immediate control and fault finding
- Variable heating configurations with HTS, HTSS Black type of ceramic heaters, adjustable according to mould index
- Automatic lubrication systems for the chain and mechanical systems
- Servo driven transport chains and automatic sheet stretching system adjustable on the screen
- Servo-plug assist to get better material distribution and homogenous products
- Long-life, special needle bearings, gapless joints in all toggle systems
- System for taking up the play between the adjusting nuts and shafts when machine comes under load
- All stacking variations will allow for A-B, A-B-C stacking sequences as standard
- High quality brands of equipment (B&R, SEW, SIEMENS, MOELLER, OMRON, SCHNEIDER, ELSTEIN, JWIS, FESTO, SMC, SKF, FAG, INA, BEKA-MAX)

GENERAL	In-Mould Cutting TSR-800	TS-800	TS-850	TS-1000	
Maximum Mould Dimensions	800x580		850x650	1000x750	mm
Cycle Speed Max. (Dry Cycle)	75			70	
Maximum Sheet Width	840		890	1040	mm
Maximum Sheet Thickness	1,5 (PET, CPET, PP, PVC, PS, OPS, PLA)				mm
Air Pressure	6				Bar
Vacuum Pump	100			200	m3/h
Power Consumption	25-50			40-75	kW
Total Installed Power	130-170			240-260	kW
Control Unit	B&R Industrial PC				
Touch Screen	B&R Colorful, 18,5"				
Central Lubrication	BEKA-MAX PC Controlled				
Software	Inpak				

PRE-HEATER				
Heaters Power	30		45	kW
Storage Length	15		25	m
Max. Temperature	130			°C

HEATERS					
Length of Heater	1800		2010	2260	mm
Upper Heating Power	50	38-(50)	64	92	kW
Lower Heating Power	50	38-(50)	64	92	kW

FORMING UNIT					
Upper Forming Depth	140				mm
Lower Forming Depth	140				mm
Clamping Force	800	300-(500)	500	600	kN
Platens Stroke (Upper / Lower)	150/150				mm

HOLE PUNCHING UNIT				
Platens Stroke (Upper / Lower)	150/150			mm
Clamping Force	500		600	kN

CUTTING UNIT				
Platens Stroke (Upper / Lower)	150/150			mm
Clamping Force	600		800	kN

CONVENTIONAL STACKER				
Max. Vertical Stroke	500			mm
Max. Horizontal Stroke	600		800	mm

PACKING DETAILS					
Length (with Pre-Heater)	11000	12000	12300	14000	mm
Width (with Elc. Cabinet)	2700			3200	mm
Height	2850			3050	mm
Weight	13000-22000				kg

Material Unwinder System

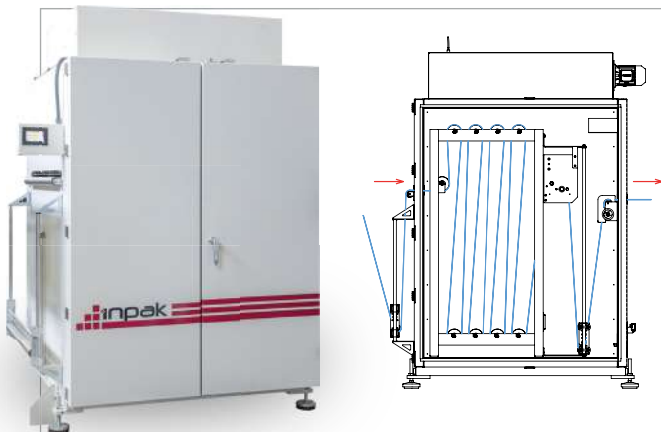
- Roll lifting system - Hydraulic
- Able to work with double roll
- Analog controlled, non-stop roll opener



Pre-Heating System

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

This is an oven which ensures high heat materials like PP to expand naturally before the plastic sheet enters into the thermoforming machine and its chain pins. This eliminates distortion on the sheet and reduces sagging.



Chain & Rails

- Servo driven transport chains
- Sheet edge heaters (Quartz) at infeed
- JWIS chains
- Water cooled, aluminum profile chain rails
- Motorised rail distance adjustment from four points, with rotary encoder for measurement
- Automatic sheet stretching system adjustable on the screen (especially for PP sheet material)
- Automatic chain lubrication - PC controlled
- Photocell for pre-printed sheet



Scrap Winder

- Asynchronous winder motor with electronical torque control
- Pneumatic discharging system of scrap.



Heaters

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

- Ceramic heaters in top and lower heater trays, individually adjustable (line by line), made from AISI-304 stainless steel
- Infrared temperature measurement on sheet surface
- Double sensor control against sheet sagging

Heater trays construction and heater control configurations are designed with high **energy efficiency** in mind.

In the heaters of the machines, HTS type resistors are used which has internal insulation. That gives more targeted radiation effect which achieves **30% energy saving** than conventional heaters.

Variable heater configurations are available according to specific needs.

- Row by row control, close to forming unit.
- Individual heater element control options.
- Covering plate in heaters infeed.



HEATERS	TSR-800	TS-800	TS-850	TS-1000	
Upper Heating Power	50	38/50	64	92	kW
Upper Heating Power	50	38/50	64	92	kW
Number of Adjustable Heater Lines	12	9/12	12	15	
Dimensions of Trays	L 1800 x W 860	L 1800 x W 860	L 2010 x W 915	L 2260 x W 1060	mm

Forming Station

Inpak provides best thermoforming process capabilities with reliability.

- 4 Column - Servo motor driven groups
- Servo driven plug assist on top press (optional bottom)
- Forming by air pressure and / or vacuum
- Tool fixing system with electrical safety interlocks
- Clamp frame or plug assist on top and bottom former
- Motorised mould height adjustment
- Pneumatic weight balancing system
- Long-life, special needle bearings, gapless joints
- Systems for taking up the play between the nuts and shafts whilst in group motions
- Flow control sensor for cooling water



FORMING	TSR-800	TS-800	TS-850	TS-1000	
Max. Mould Size	800 x 580	800 x 580	850 x 650	1000 x 750	mm
Upper Forming Depth	140	140	140	140	mm
Lower Forming Depth	140	140	140	140	mm
Clamping Force	800	500	500	600	kN
Platens Stroke (Upper/Lower)	150/150	150/150	150/150	150/150	mm

- TS Series of machines have separate forming and cutting stations.
- TSR Series of machines have in-mould cutting capability in forming station.

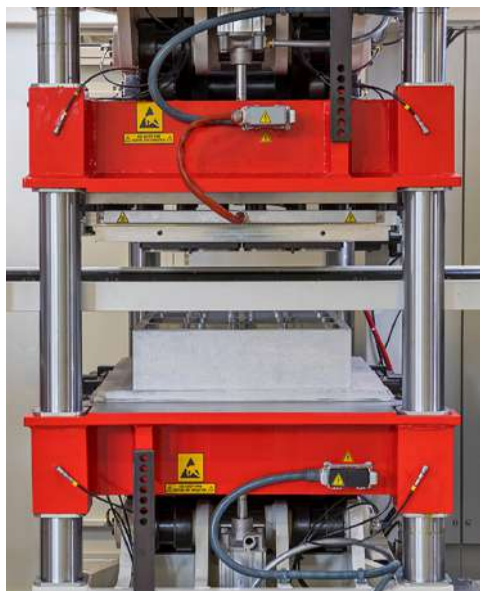
Hole Punching Station

- Servo motor driven, top and bottom independent
- Individual motion control of stroke movement of top and bottom hole punch tables
- Motorised vertical adjustment of top table
- Motorised position adjustment of station with rotary encoder
- Pneumatic weight balancing system
- Long-life, special needle bearings, gapless joints
- Vacuum device for hole punching scraps



HOLE PUNCHING	TSR-800	TS-800	TS-850	TS-1000	
Clamping Force	500	500	500	600	kN
Platens Stroke (Upper/Lower)	150/150	150/150	150/150	150/150	mm

Cutting Station



- Servo motor driven, top and bottom independent
- Motorised precision cutting adjustment on top table by 0,03mm/pulse
- Cutting knife heating (max. 170°C) and isolation 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
- Pneumatic weight balancing system
- Long-life, special needle bearings, gapless joints
- System for taking up the play between the nut and shaft (very important for long knife life)

CUTTING	TSR-800	TS-800	TS-850	TS-1000	
Clamping Force	600	600	600	800	kN
Platens Stroke (Upper/Lower)	150/150	150/150	150/150	150/150	mm
Power of Plate Heaters	9	9	12	14	kW

Low- Level Handling System

To bring stacked products down to 90cm level of height for easier packing process.



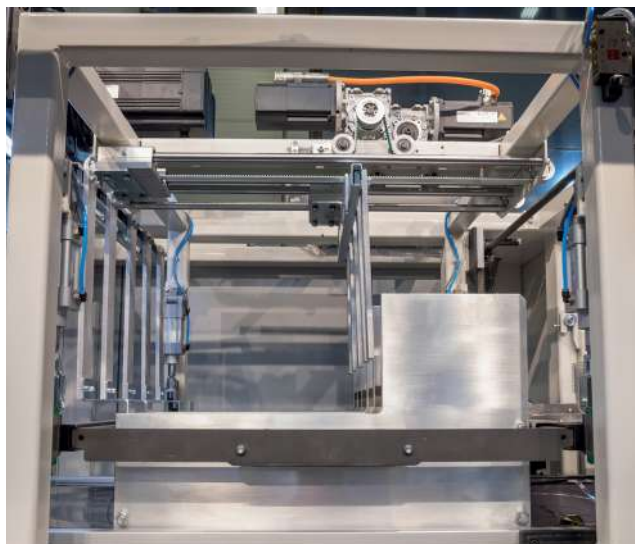
Stacker Unit

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

STACKER OPTIONS	Standard Stacker	Servo A-B Stacker	Standard Stacker & Down Stacking	Fast Robot Stacker	Fast Robot Stacker & Down Stacking	Lid Robot Stacker
▪ Upward Stacking + Sweeping on to the out Conveyor	✓	✓	✓	✓	✓	✓
▪ Upward Stacking with A-B or A-B-C Stacking	✓	✓	✓	✓	✓	✓
▪ Down Stacking with Additional Conveyor System			✓		✓	
▪ Robotic A-B or A-B-C Stacking				✓	✓	
▪ Special Stacking for Round Parts						✓

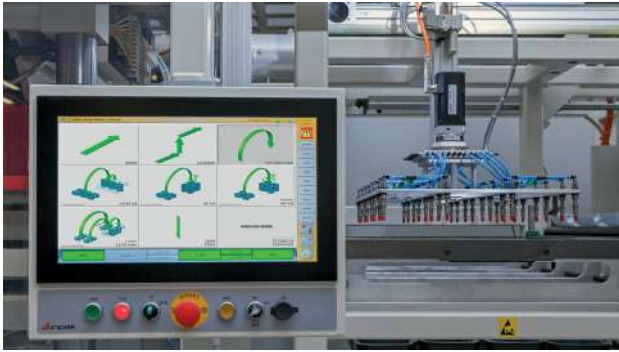
Standard Sweeper

Sweeping the stacked and counted products from the stacker upper frame walls towards the conveyor.



Servodriven A-B Stacker & Sweeper

Alternative of the robot stacker for A-B or A-B-C stacking. It enables you having AB stacking inside the upstacker frame walls. "A" product line goes under "B" line with a servo motor driven mechanism. Another servomotor drives the counted stacked products on to the conveyor. A-B or A-B-C stacking is possible with actual forming speeds.



Robot Stacker

Robot stacker is the most flexible option which provides several working modes. This is a good option for A-B stacking, also good for short or small products which are difficult to be held in conventional stacker upper frame walls.

Classic working modes:

- ▣ Classic sweeper mode
- ▣ Classic A-B stacking mode (A-B within upstacker frame walls)

Robot working modes:

- ▣ Pick and place
- ▣ 180° A-B stacking
- ▣ 90° A-B stacking
- ▣ 2-step A-B stacking
- ▣ A-B-C stacking



Lid Robot Stacker (with Servodriven Upper and Lower Frame)

Lid robot stacker has advantages and it is useful when most of the dedicated products for the machine has round cutting geometries. The system enables having higher stacks. It is also possible to have reduced sheet scrap ratios with "W" cavity placements.

Working modes:

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



Down Stacker

Down stacker is an additional feature to standard upward stacking. Down stacker is useful while stacking large and thin products, such as fruit liner trays. Such products are not easy to be held in upstacker frame walls. Therefore, down stacker is well suited for these type of products.



ALL OVER THE WORLD

With Exports to 6 Continents and 46 Countries

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