

TECHNOLOGICAL EQUIPMENT FOR HOT FILLING OF JUICES IN GLASS BOTTLES

In composition:

1. SEMI-AUTOMATIC DEPALLETIZER

Model: Depal 512-mini

The machine is designed for depalletizing of empty new glass bottles working on the principle of lifting the pallets. The system consists of a frame, elevator for the pallets, layer shifting device and discharging table with multi-lane conveyor.

The pallet with new glass bottles is loaded by assistance of forklift into the depalletizer. The external wrapping of the pallets, layer pads and empty pallets are removed by operator, the operation of the layer shifting frame is controlled by the operator; all other functions are automatic.

The layer which is located under the shifting layer, is supported by auxiliary frame. This ensures high shifting speed without risk of deformation of the lower layers. Smooth acceleration and deceleration processes. The module is complete with safety guards with switches.

Technical specification:

Capacity	max. 30 layers per hour
Pallets	Euro pallets 1200 x 800mm
Containers dimensions	Height from 65 - 280mm, diameter from 55 - 110mm
Max height of the pallet	2200 mm
Power supply	3 x 400 V / 18 kW
Air consumption	0,4 – 0,6 MPa, 18 m ³ /hour

Components: Drives SEW Eurodrive, pneumatic FESTO, PLC SIEMENS S7, sensors BALUFF, SICK, electrical board RITTAL.

2. UNIVERSAL RINSING MACHINE FOR NEW BOTTLES

Model: IND-Wash 56 S2

The machine is designed for rinsing and steaming of new bottles (or metal cans, glass jars, etc.). The bottles are rotated 360° by gripper chains with adjustable gripping distance. After the first rotation at 180° the bottles enter the treatment area which is a closed 2-section tunnel with spray nozzles system for water and steam injection. After exiting the rinsing tunnel, the bottles are again rotated at 180° and transferred to the exit conveyor.

The machine is universal – there is no need to change format parts for different container sizes and shapes.

Capacity	pph	max. 7000
Diameter of the bottles	mm	min. 55 ÷ max. 110
Height of the bottles	mm	min. 50 ÷ max. 280
Supply	V/Hz/kW	400/50/3.1
Water consumption	l/hour	1500
Water pressure	bar	2-3
Steam consumption	kg/hour	30-50
Steam pressure	bar	3

Standard equipment completion:

- Main frame manufactured in stainless steel 304;
- Working chamber tightly closed;
- Electrical cabinet in stainless steel;
- Adjustable gripping distance for different container sizes, manually set by means of a single handwheel;
- Manually adjustable nozzles position by means of a handwheel;
- Centralized draining system for of the waste water;
- Entry/exit flattop chain conveyors.

Advantages:

- No need to change format parts for different container sizes;
- Quick and easy adjustment for different container sizes;
- Smooth speed adjustment by frequency inverter.

3. ROTARY FILLING MACHINE

Model: IND-Dose 46 PO-12

The machine is designed for (hot) filling of juices by level (using gravity or pressure overflow system). The filling is done with 12 filling heads. The corpus of the machine and all parts in contact with the products (tank, nozzles) are manufactured from stainless steel AISI 316.

Capacity:

- 0.25 L bottle	bph	max. 6400
- 0.5 L bottle	bph	max. 3500
- 1.0 L bottle	bph	max. 1800
Diameter of the bottles	mm	min. 55 - max. 110
Max. pulp size	mm	3
Height of the bottles	mm	min. 140 ÷ max. 300
Installed power	kW	4.5

Special filling valves designed for hot filling of juices, pellucid and foamy products. The valves correspond to all hygiene requirements; they are manufactured in AISI 316 stainless steel and materials approved for the food industry. In the process of dosing, the filling nozzles tightly press the neck; the filling endpiece is executed with two flow tracts – one for filling and one for foam removal and ensures the same product level in the bottles.

Composition of the machine:

- Stainless steel structure, tightly closed fencing;
- Flat-top chain conveyor box (without drive);
- Buffer tank divided into two sections - product supply tank and return tank. This system is especially developed for hot-filled juices, to allow gravity filling for prevention of foaming and aeration of the product. Tanks manufactured in stainless steel AISI 316. The system is equipped with re-circulation pump, level controls, temperature sensors, inspection hatches and sprayballs for automatic CIP washing.
- Filling carousel with 12 valves;
- Filling system suitable for foamy products;
- All necessary accessories for automatic washing.

4. CLOSING MACHINE FOR TWIST-OFF CAPS

Model: IND-Close 12 E

The machine is designed for automatic closing and vacuuming of glass bottles and jars with metallic TO caps. It is completed with a linear magnetic caps feeder which is easily loaded with caps (height of load bunker 1000 mm) and prevents scratching of the caps' surface.

The machine is manufactured completely in stainless steel.

Caps are being fed by the linear feeder to the chute for caps and slide down by means of their own weight to the caps feeding head. When a container is being fed to machine by the transport it takes a cap from the feeding head and steam is injected at the moment of closing to ensure proper vacuuming. The preliminary screwing rubber screws the cap so it stays stable. After that the closing is completed by a pair of closing belts and the ready package exits the machine.

Capacity	bph	max. 12 000
Caps hopper capacity	liter	250
Diameter of the cap	mm	38 - 82

Diameter of the container	mm	min. 55 – max. 110
Height of the container	mm	min. 65 ÷ max. 300
Supply electrical	V/Hz	380/50
Steam	MPa	0.5 – 0.8
Consumption of steam	kg/h	30 - 90
Consumption of water	l/h	80 - 160
Compressed air consumption 6 bar	NI/h	1500
Installed power	kW	2.8

Basic composition:

- Linear magnetic caps feeder with 250 L hopper volume;
- Adjustable chute for the caps;
- Caps feeding head for TO caps;
- Preliminary screwing rubber;
- System for cooling the closing belts;
- System for supplying steam to the package and cap;
- System for ventilation of the machine with a stainless-steel fan;
- Front lid with heat resistant hardened glass;
- Electrical cabinet in stainless steel;
- Pair of closing belts;
- Springs for adjusting the capping force;
- Container track - welded construction made of chrome-nickel steel;
- Inductive output sensor;
- Frame - welded steel construction;
- Reduction gear with motor for the main drive;
- Gearmotors-Lenze (Germany);
- Inductive sensors-IFM / Schneider (Germany);
- Stainless steel fan for ventilation-Dynair (Italy);
- Stainless steel plate chain and elements – Movex/Systemplast

Advantages:

- Fast and easy adjustment for different diameters and heights of packages;
- Smooth regulation of capacity;
- Large and lowered hopper for cap supply;
- Lack of hitting between caps (like with centrifugal orientators) – no scratching of the lacquer coating;

5. PASTEURIZATION AND COOLING TUNNEL

Model: PT 42-9

Used for short pasteurization and cooling of hotfilled products in bottles.

Capacity: 3200 pcs/h, 500 ml bottles @ 35 min pasteurization cycle

Several temperature areas are formed along tunnel's length:

- heating area
- temperature retaining area
- cooling area

Main belt conveyor is a modular type made of PP (polypropylene). It is equipped with own adjustable drive that provides possibility for time gradually regulation of packages stays in machine, depending on pasteurized product. Packages passing from inlet conveyor to main belt conveyor and from main belt conveyor to outlet conveyor is done by means of special plates.

Each of the formed temperature areas is equipped with an external vessel. Casing bottom is made in such manner so that water from each area to flow down to the respective vessel. Circulation pumps, which transport water to irrigation system are mounted to the vessels.

The irrigation system consists of nozzles which irrigate packages. Nozzles are located in such way to form a

homogenous temperature in the respective temperature area. Water heating in the areas for heating and pasteurization is done in a flow through heat exchanger. The heat exchanger is completed with steam and condensation coupling. Start/stop buttons are mounted on both the entrance and the exit, by which the operator can stop or start main belt conveyor and the respective conveyor in case of emergency.

Automatics provide regulation of packages flow as well as temperature in every temperature area.

Cold water from the chiller enters a plate heat-exchanger. There it cools water, which circulates between the heat exchanger and the tunnel pasteurizer's last section.

Technical specifications:

Output	bottles/h	3200
Packaging material	glass	
Packaging volume	ml	500
Product		fruit juice
Inlet product temperature	°C	78-80
Outlet product temperature	°C	35-40
Heating water temperature	°C	90
Pasteurization temperature		
- center of the product	°C	82
- bottleneck and cap	°C	>85
Cooling water temperature	°C	18
Cycle	min	35
Heating and Holding time	min	11
Cooling time	min	24
Steam consumption in working mode		
At 3 bar steam pressure	kg/h	~45
Steam consumption at start-up	kg/h	~280
Water consumption 18 °C	m ³ /h	~3.5
Water hardness	dH	<7
Compressed air consumption (0.6MPa)	m ³ /h	~2.5
Electricity	420V/50Hz	
Installed power	kW	~8.2
Water from chiller temperature	°C	10
Required chiller capacity	kcal/h	35000
Chiller feeding pump	m ³ /h	3.5
Overall dimensions		
-length	mm	~10200
-width	mm	~1950
-height	mm	~2035

6. DRYING MACHINE

Model: IND-Blow 86

The machine is designed for outside drying of bottles by using of the "air-knife" principle.

Installed power	kW	7.5
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Main composition:

- 2 lateral efficiency air knives;
- Centrifugal blower;
- Acoustic blower enclosure.

Advantage: up to 75% savings in electrical cost over compressed air.

7. FLAT TOP CHAIN CONVEYORS

Model: IND-Trans 71

System of conveyors, designed for transportation of the bottles. Manufactured in stainless steel AISI 304. Element base: gearmotors – Lenze; frequency invertors–Omron/Lenze; sensors –IFM Electronics; plate chain and elements – Movex/Systemplast

8. VACUUM TESTING MACHINE

Model: IND-Test 61

The machine is designed for indirect measuring of the vacuuming level inside twist-off closed bottles by detecting the sinking of the vacuum button and for separating the bottles with insufficient vacuum on a platform.

Output	bph	max. 6500
Diameter of the bottles	mm	from 40 to 130
Height of the bottles	mm	min. 65 - max 280
Electrical supply	V/Hz	400/50
Installed power	KW	0.25
Water proof		IP 65

9. LINEAR LABELLING MACHINE FOR APPLICATION OF SELF-ADHESIVE LABELS

Model: IND-Lab 32B

This is a combined labeling machine of linear type, designed for automatic application of N°1 front and N°1 top (also tamper-evident) label on cylindrical bottles.

Capacity	pph	max. 6500
Number of labeling stations	pc	2
Height of front label	mm	max 160
Length of front label	mm	max 250
Height of containers	mm	min. 65 ÷ max. 280
Diameter of containers	mm	from 55 -110
Diameter of the rolls with labels	mm	max 300
Supply electrical	V/Hz	400/50
Installed power	kW	1.75

Main composition:

- Base frame manufactured in stainless steel;
- Stainless steel control panel;
- N.2 self-adhesive labeling stations (HERMA-Germany) with integrated label sensors teaching program and steplessly adjustable label speed; x-y-z adjustment;
- 3.5 meters flat-top chain conveyor with independent drive;
- Drives LENZE – Germany.
- Cable connections by Lappkabel – Germany.
- Electrical components by OMRON, Moeller, Weidmuller.

10. AUTOMATIC GROUPING AND SHRINK-WRAPPING MACHINE WITH TRAY AND FILM

Model: IND-Pack 29 T

The machine is designed for grouping of cylindrical bottles or jars, forming of cardboard trays, placing the grouped bottles in the trays, gluing of the trays with hot-melt glue and wrapping them in thermo-shrinkable foil.

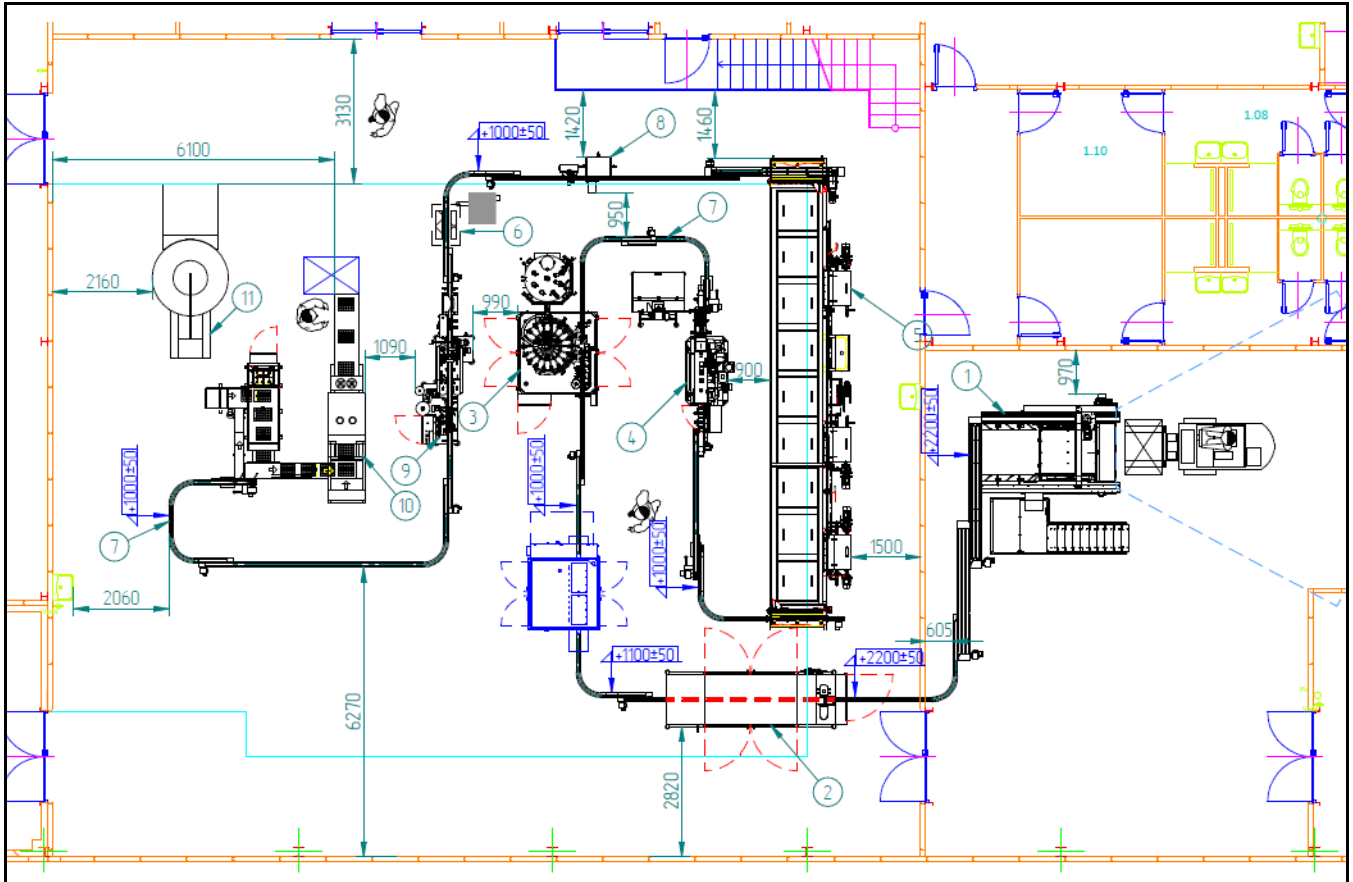
Capacity	cycle / min	max. 12 with tray
	cycle / min	max. 15 without tray
Max. packs dimensions LxB	mm	500x400
Max. bottles height	mm	290
Min. jars height	mm	65
Roll dimensions /max./		
- roll diameter D	mm	max. 360
- thickness of the film	mm	0.055 up to 0.1
- width	mm	max.580
Method of gluing of the trays		hot-melt glue
Tray height	mm	max.65
Electric supply	V/Hz	400 / 50

Installed power	kW	40
Weight	kg	2 100

Standard equipment completion:

- Inlet conveyor for the bottles/Jars
- Open trays magazine with capacity up to 100 open trays
- Module for tray forming
- Hot melt generator Nordson Pro Blue
- Manipulator for automatic wrapping of the packs in foil
- Thermo-shrinking tunnel
- Cooling fan
- Exit rollgang 1500 mm

Placement of the Equipment into Factory (Factory Floorplan)



Installation requirements

1. Inlets:

- Total installed electrical power: 98 kW. Average consumption: ~ 70 kW/h.
- Compressed air consumption: 35 m³/h @ 6 bar.
- Water consumption: 2 m³/h @ 3 bar.
- Water chiller capacity: 40 kW.
- Steam consumption at tunnel start-up: 280 kg/h @ 3 bar.
- Steam consumption of the whole line in working regime: 90 kg/h @ 3 bar + 90 kg/h @ 5 bar.

The actual detailed utilities input/output values shall not increase from the tentative numbers stated above by more than 5%.

2. Outlet systems:

Sewage/Canalization and ventilation

3. Connectivity:

Internet connection DHCP via LAN cable to Ethernet1 router (connectivity in the direct vicinity of the Equipment with the following parameters: DHCP via LAN cable to Ethernet1 router with free VPN transfer)