PET PACKING TECHNOLOGY

30,000 bph

14,000 bph

12,000 bph

7,000 bph

6,000 bph

3,000 bph

2,000 bph

smi
Optima Turbo is a family of 4/8/16 cavities linear blow moulding machines which can produce bottles with continuous output of 7 000/14 000/28 000 BPH 500ml bottles. Special NT version of Optima allows matching the number of cavities to required speed and packaging size which makes Optima suitable for bottles 200ml up to 5L as well as wide mouth jars. Optima Turbo is fully electric blower where all vital units for bottles production process, such as closing unit, stretching rods, transmission of preforms between oven & moulds and oven itself are controlled and steered by servo drives for each section. Optima Turbo is designed for customers interested in high advanced and reliable blower for round, square, oval, asymmetric, trigger, flask or flat bottles – for water, CSD, beer, spirits, detergents, dairy drinks or edible oil.

- Compact size with maximal output – small footprint gives a possibility to fit a complete line in very limited space.
- Discharging ready bottles from Optima directly on air conveyor.
- Energy efficient heating process – NIR lamps instead of traditional IR radiation – electromagnetic radiation allows to reduce size of the heating units, total number of lamps, energy consumption and reaction time needed to start production after stop.
- Reduced air dead volume – low air consumption thanks to air collectors and special valves designed for linear.
- Continuous production of perfect bottles – 40 bar blowing pressure and system of clearance compensation on the closing unit and using servomotors.
- Useful equipment for easy operation: Central lubrication system and quick mould change system and Power Wizard based on pyrometers for self-adjustment process of heating.

![Optima Turbo Family](image)

**Optima Turbo**

**Blowing pressure**
- Output up to 40 bar

**Bottle size**
- 0,25 - 0,5 L
- 0,5 - 1,0 L
- 1,0 - 2,0 L

**Output**
- up to 28 000 bph (0,5L)
- up to 26 000 bph (1,0L)
- up to 24 000 bph (1,5L)

**Power installed**
- 320 kW

**Effective power (1,0L bottle)**
- 20 kW

**Working air quantity (40 bar)**
- 39,6 m³/min

**Number of cavities**
- 16

**Steering voltage**
- 24V / DC

**Mould material**
- FORTAL

**Optima 16 Turbo**

**Optima 8 Turbo**

**Optima 4 Turbo**

**Blowing pressure**
- Output up to 40 bar

**Bottle size**
- 0,25 - 0,5 L
- 0,5 - 1,0 L
- 1,0 - 2,0 L

**Output**
- up to 14 000 bph (0,5L)
- up to 13 000 bph (1,0L)
- up to 12 000 bph (1,5L)

**Power installed**
- 150 kW

**Effective power (1,0L bottle)**
- 65 kW

**Working air quantity (40 bar)**
- 19,8 m³/min

**Number of cavities**
- 8

**Steering voltage**
- 24V / DC

**Mould material**
- FORTAL

**Optima 16 Turbo**

**Optima 8 Turbo**

**Optima 4 Turbo**

**Power installed**
- 110 kW

**Effective power (1,0L bottle)**
- 34 kW

**Working air quantity (40 bar)**
- 6,0 m³/min

**Number of cavities**
- 4

**Steering voltage**
- 24V / DC

**Mould material**
- FORTAL

**Optima Turbo NT**

- 2 – 4 – 8 – 10 – 20 cavities
- Speed up to 35 000 bph (500ml)

**Optima Jar**

- 2 – 4 cavities
- Speed up to 4 500 jars per hour

**Optima MAX**

- 1 – 2 – 4 cavities
- Speed up to 4 500 bph
Compact size and durability of the equipment.
Flexible and efficient – heating system with heating modules – each of them consisted of 7 heating zones (adjusted from machine’s touchscreen) ensures proper heating up even long preforms – full control of materials distribution during blowing process.
Easy & flexible in operation – easy mould change-over system and possibility to work with many types of neck rings.
Advanced PLC with build-in memory to keep blowing parameters for many types of bottles.
Reliable machines ensuring cost-saving production.
Modular construction – modules can be combined together with one frame – each module can work integrated to get maximal machine’s efficiency or can be switched off to adjust.

HS and Combi are series of linear blowing machines suitable for production of PET bottles 200 ml – 3 000 ml. Thanks to reliable construction, easy operation and maintenance HS and Combi machines working all around the world.

JUMBO is a series of semi-automatic machines designed for industrial production of medium size and large PET packages. 0.25 and 6.0 liters bottles can be blown as well as ONE-WAY USE or MULTIPLE-WAY USE 5 GALLON BOTTLES. JUMBO machine can also manufacture WIDE-MOUTH JARS with the neck diameter up to 120mm. The machines are easy to operate and service. Robust construction of closing unit, easy regulation and efficient nozzle clamping system ensures production of bottles at highest technological level. Machines are manufactured with the usage of top brands components supplied by companies, which guarantee service around the world: TOSHIBA, MITSUBISHI, FESTO, NORGREN. JUMBO machines fulfill all the European standards.
Stratos family

Reliable & easy in operation – mould change-over system with rollers, central lubrication system, air recuperation – lower air consumption.

Discharging ready bottles from Stratos directly on conveyor.

Precise & high quality productions – stretching bars with servomotors provides fluent regulation of blowing process.

Compact size & user-friendly PLC control system with option to connect with internet and on-line support.

Powerful heating unit with precise controller.

STRATOS 10E and 20E electric machines are fully automatic blowers for 3.0L – 20.0L bottle productions.

**HL & CL family**

HL 3000 and CL 200 / 400 are fully automatic linear PET blowing machines suitable for production of bottles 200 ml – 2000 ml. Machines have very compact footprint and can be easily fit in very limited space. Ready bottles are discharged in upright position and can be easily connected with air conveyor. Low air and energy consumption makes HL and CL suitable for cost effective production of various shapes of PET bottles.

HL closing unit is moved by servomotor and equipped with compensation system. Central lubrication system installed in HL machines allows easy, fast and precise application of lubricant. Preform transport system based on specially designed pins (as in HS series) allows stable work of machine with oil and chemical preforms.

**KEY BENEFITS**

- Bottles discharged in upright position – no devices for bottle orientation needed.
- Compact size – space saving solution.
- Simple construction, easy operation and maintenance.
- Easy change-over of bottle size and types of neckings.
- High bottle quality with air blowing pressure only 25 bars – energy saving solution.

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**HL 3000**

- Blowing pressure: 25 bar
- Bottle size: 0.25 up to 1.5 L
- Output 1.5 L: up to 1000 bph
- Number of cavities: 2
- Power installed: 36.0 kW
- Stearing voltage: 24V/DC
- Mould material: FORTAL

**CL 200**

- Blowing pressure: 25 bar
- Bottle size: 0.25 bar / 2.5 L
- Output: 1.5 L
- Number of cavities: 2
- Power installed: 35.0 kW
- Working air quantity (10 bar): 1.0 m³/min
- Blowing air quantity (25 bar): 1.73 m³/min
- Steering voltage: 24V/DC
- Mould material: FORTAL

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**HL 400**

- Blowing pressure: 25 bar
- Bottle size: 0.25 L – 2.5 L
- Output: up to 4000 bph
- Number of cavities: 4
- Power installed: 70.0 kW
- Working air quantity (10 bar): 2.0 m³/min
- Blowing air quantity (25 bar): 3.46 m³/min
- Steering voltage: 24V/DC
- Mould material: FORTAL
SMF conveyors are designed to transfer bottles, jars, cans, boxes and many other products. Depending on customers' requirements conveyors are available in straight parts or curve parts and may work in horizontal line or with different inclination angle. For each project SMF prepares unique layout of conveyors to make it suitable for capacity of the line, technical conditions and available space to ensure stable production.

Types of conveyors produced by the SMF:
- AIR conveyors system
- Combiners/ Adders
- Plate conveyors system
- VACCUM Conveyors
- ROLL Conveyors
- BELT Conveyors
- CHAIN Conveyors
- BUFFER Conveyors / Rotary tables

**SB bottle unscrambler** is used to provide bottles in upright position to transfer them directly to filling line. Disordered bottles are loaded into bottle hopper and unscrambler puts them into vertical position and moves them on the vacuum/ plate or air conveyor. SMF offers liner “belt type” unscramblers (SB6 and SB10) as well as “pocket type” rotary unscramblers SB20 and SB40 most suitable for very light bottles.

**KEY ADVANTAGES OF SB SERIES:**
- Suitable for PET bottles or other type of plastics
- Versatility in running many bottle formats and sizes on same machine – suitable for cylinders, jars, ovals, squares, rectangles, trigger sprays and other oddly shaped bottles
- Cost-saving solution – automation of production process,
- Hygienic process – bottles do not have contact with operators, all bottle contact part made in stainless steel and plastic
- Operational simplicity – no specialized personnel needed & fast and easy format change
## PET BLOWERS

<table>
<thead>
<tr>
<th>BOTTLE SIZE</th>
<th>MACHINE SPEED (bottles/hour)</th>
<th>MAX BOTTLE VOLUME</th>
<th>MACHINE TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0,25 – 2,5 Liters</td>
<td>2000 0,5 L bottles/h</td>
<td>2,5 L</td>
<td>COMBi 200</td>
</tr>
<tr>
<td>0,25 – 2,0 Liters</td>
<td>4000 0,5 L bottles/h</td>
<td>2,5 L</td>
<td>COMBi 400</td>
</tr>
<tr>
<td>0,25 – 3,0 Liters</td>
<td>3000 0,5 L bottles/h</td>
<td>3,0 L</td>
<td>HS 3000</td>
</tr>
<tr>
<td>0,25 – 3,0 Liters</td>
<td>6000 0,5 L bottles/h</td>
<td>3,0 L</td>
<td>HS 6000</td>
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<tr>
<td>0,25 – 2,5 Liters</td>
<td>7000 0,5 L bottles/h</td>
<td>2,5 L</td>
<td>optima 4 turbo</td>
</tr>
<tr>
<td>0,25 – 1,5 Liters</td>
<td>14000 0,5 L bottles/h</td>
<td>1,5 L</td>
<td>optima 8 turbo</td>
</tr>
<tr>
<td>0,25 – 1,5 Liters</td>
<td>28000 0,5 L bottles/h</td>
<td>1,5 L</td>
<td>optima 16 turbo NT</td>
</tr>
<tr>
<td>0,25 – 6,0 Liters</td>
<td>500 5 L bottles/h</td>
<td>5 L</td>
<td>JUMBO 5</td>
</tr>
<tr>
<td>10,0 – 20,0 Liters</td>
<td>50 20 L bottles/h</td>
<td>20 L</td>
<td>JUMBO 20</td>
</tr>
<tr>
<td>3,0 – 12,0 Liters</td>
<td>2000 5 L bottles/h</td>
<td>12 L</td>
<td>STRATOS 10E</td>
</tr>
<tr>
<td>5,0 – 20,0 Liters</td>
<td>500 5 L bottles/h</td>
<td>20 L</td>
<td>STRATOS 20T</td>
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</table>

## BOTTLE UNSCRAMBLERS

<table>
<thead>
<tr>
<th>BOTTLE SIZE</th>
<th>MACHINE SPEED (bottles/hour)</th>
<th>MAX BOTTLE VOLUME</th>
<th>MACHINE TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0,25 – 2,0 Liters</td>
<td>7000 0,5 L bottles/h</td>
<td>2 L</td>
<td>SB 6</td>
</tr>
<tr>
<td>0,25 – 2,0 Liters</td>
<td>12000 0,5 L bottles/h</td>
<td>2 L</td>
<td>SB 10</td>
</tr>
<tr>
<td>0,25 – 2,0 Liters</td>
<td>12000 0,5 L bottles/h</td>
<td>2 L</td>
<td>SB 20</td>
</tr>
</tbody>
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