

# INTEC 500/700/900/1000/1100

IN-LINE EXTRUSION AND THERMOFORMING



# INTEC IN-LINE extrusion and thermoforming plant, the most efficient system to manufacture plastic cups and containers

INTEC offers the following advantages to the end-user versus the off-line system:

**PERFORMANCE** - The INTEC is designed for very high output running 24 hours 7 days a week.

**IMPROVED PRODUCT QUALITY** - The immediate processing of the extruded sheet into a thermoformed containers allow lower temperatures and better heat distribution during the process and gives the product better clarity, improved mechanical stiffness and better appearance. Furthermore, the instantly scraped recycled scrap prevents contamination of the product.

**LESS USE OF MATERIAL** - No edge trim, the skeleton is immediately re-extruded. Possibility to down gauge the sheet keeping the same product stiffness.

**BETTER ENERGY EFFICIENCY** - The residual temperature of the extruded sheet reduces the amount of required heating generating an estimated energy saving up to 25% during the entire process.

**OPTIMISATION OF PRODUCTION OUTPUT** - The down-time associated with roll changing is eliminated and there is the ability to immediately correct any problem arising in the extruded sheet with the minimum of scrap.

**SPACE REDUCTION** - There is no need for winding and unwinding the sheet, thus generating important space savings: No intermediate storage area and transportation handling required . In addition, the direct processing of the scrap also reduces the space requirement significantly.

**PERSONNEL REDUCTION** - The INTEC line can be managed by a single operator.

In simple words: More cost-effective



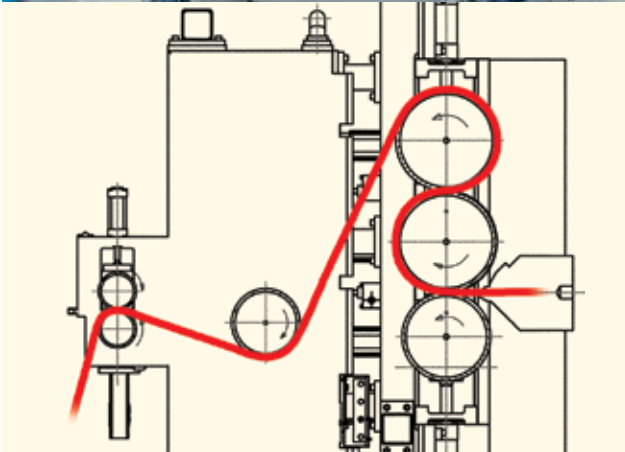






# WM INTEC inline extrusion and thermoforming technology

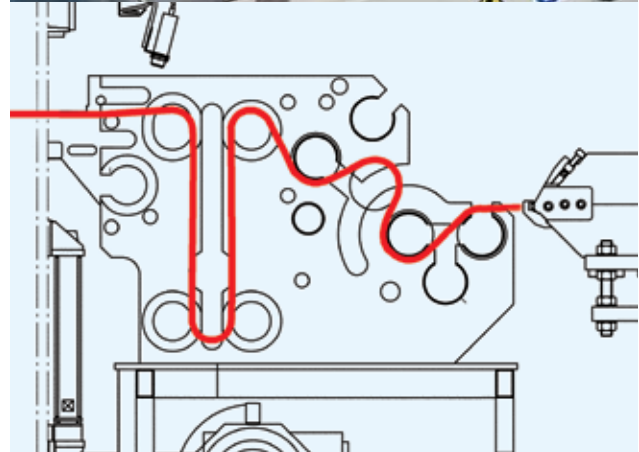
A turnkey solution designed to provide closed loop process from raw material handling up to the packaging of the finished product



## Vertical roll stack

WM has designed a 3-rolls vertical stack calender to ensure:

- Low bending of the rollers
- Low thickness tolerance
- Rigid frame and roll constructions
- Individually designed temperature control systems
- Highly accurate single drivers for each roll



## Thermo-calender unit

The WM thermo calender unit stabilizes and optimizes the PS sheet temperature before entering the forming area. The calender is built on a strong steely carrying structure.

There are two kinds of movements:

- continuous motion
- intermittent motion

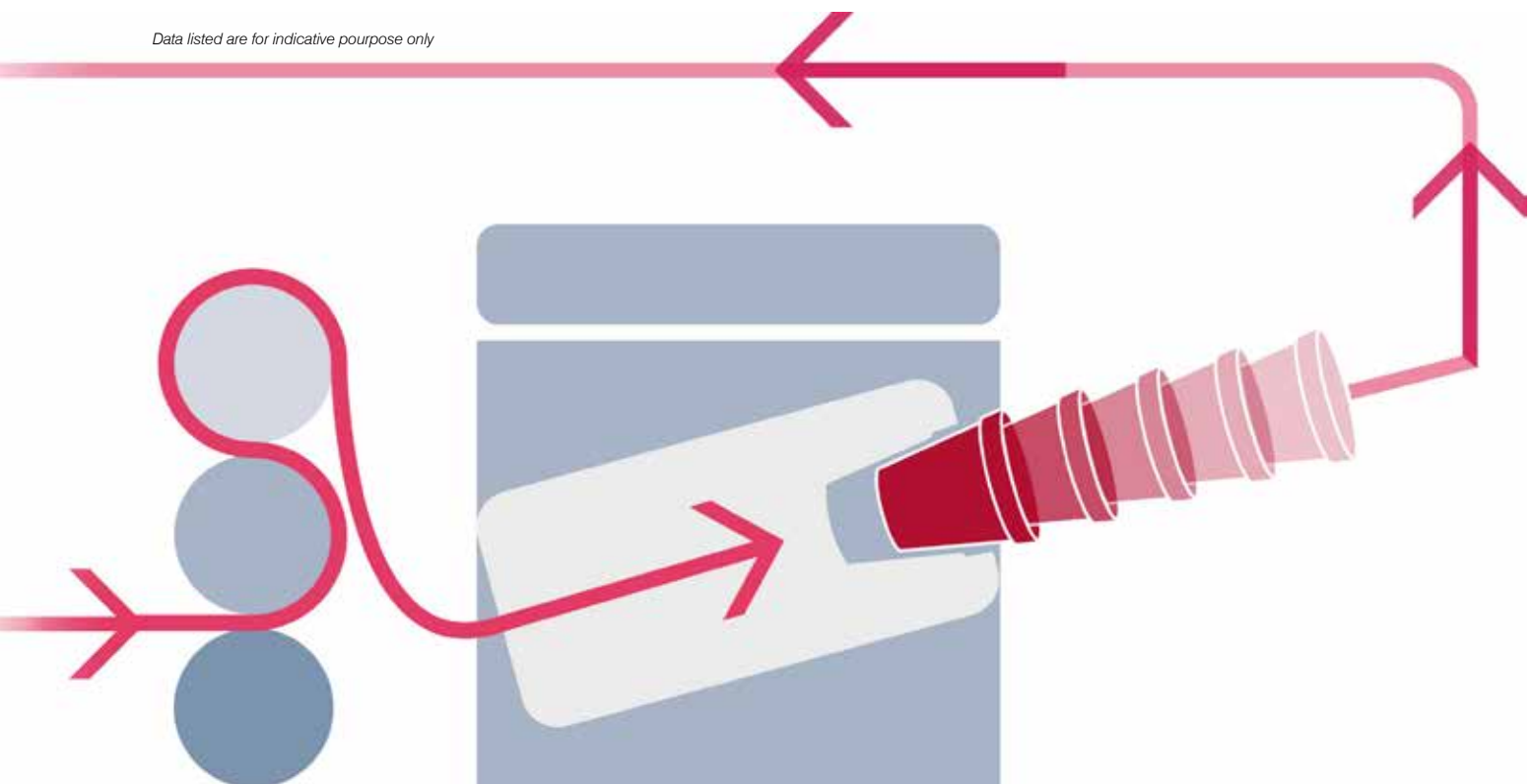
Continuous motion is used at the production start-up for sheet lead-in. Intermittent motion is used within the normal sequence of production run.

High energy efficiency as heating ovens are not necessary.

# INTEC range

| MODEL                                      | INTEC FTP<br>1000                      | INTEC<br>500                           | INTEC<br>700                           | INTEC<br>900/900D                      | INTEC<br>1000                        | INTEC<br>1100                      |
|--|--|--|--|--|--------------------------------------|------------------------------------|
| Main extruder diam.                        | 75 - 90 mm                             | 45 mm                                  | 45 - 75 mm                             | 75 - 90 mm                             | 120 - 150 mm                         | 120 - 150 mm                       |
| Max. capacity PS                           | 1100                                   | 510                                    | 850                                    | 1100                                   | 800 kg/h                             | 1.000 kg/h                         |
| Max. capacity PP                           | 750/900 kg/h                           | 450 kg/h                               | 750 kg/h                               | 750/900 kg/h                           | -                                    | -                                  |
| Co-extruder diam.                          | 50 mm                                  | 30 mm                                  | 30 - 45 mm                             | 30 - 45 mm                             | 50 mm                                | 50 mm                              |
| Type of calender                           | Laminating                             | Laminating                             | Laminating                             | Laminating                             | Thermocalender                       | Thermocalender                     |
| Max. forming tool area                     | 1060x750 mm                            | 570 x 375 mm                           | 705 x 400 mm                           | 880 x 520 mm                           | 1000 x 1000 mm                       | 1010 x 800 mm                      |
| Forming system                             | Pressure                               | Pressure                               | Pressure                               | Pressure                               | Vacuum only                          | Pressure                           |
| Forming clamping force                     | 60.000 daN                             | 30.000 daN                             | 40.000 daN                             | 75.000 daN                             | 40.000 daN                           | 35.000 daN                         |
| Trimming force                             | 70.000 daN                             | -                                      | -                                      | -                                      | -                                    | 20.000 daN                         |
| <b>NOTE</b>                                | 75° tilting mould<br>in mould trimming | 75° tilting mould<br>in mould trimming | 75° tilting mould<br>in mould trimming | 75° tilting mould<br>in mould trimming | For HIPS plates<br>in mould trimming | For HIPS cups<br>separate trimming |
| <b>PRODUCTION RATE<br/>FOR CUPS</b>        |  |  |  |  |                                      | <b>pcs/h</b>                       |
| Ø 70,3 Rimmed PP-PET-PS<br>(200 cc ÷ 8 oz) | -                                      | 46.000                                 | 80.000                                 | 120.000                                | -                                    | 200.000                            |
| Ø 92 Rimmed PET<br>(400-550 cc ÷ 12-16 oz) | -                                      | 35.000                                 | 43.000                                 | 60.000                                 | -                                    | -                                  |
| Ø 92 Rimmed PP<br>(400-550 cc ÷ 12-16 oz)  | -                                      | 28.000                                 | 30.000                                 | 55.000                                 | -                                    | 145.000                            |
| <b>PRODUCTION RATE<br/>FOR PLATES</b>      |  |  |  |  |                                      |                                    |
| Ø 210 mm PP LIGHT                          | 29.000                                 | -                                      | -                                      | -                                      | -                                    | -                                  |
| Ø 210 mm PP HEAVY                          | 20.000                                 | -                                      | -                                      | -                                      | -                                    | -                                  |
| Ø 210 mm PS LIGHT                          | 34.000                                 | -                                      | -                                      | -                                      | 35.500                               | -                                  |
| Ø 210 mm PS HEAVY                          | 25.000                                 | -                                      | -                                      | -                                      | 28.000                               | -                                  |

Data listed are for indicative purpose only



# WM - INTEC inline extrusion

INTEC line integrates high quality components from the most reputable suppliers



## DOSING UNITS

**Maximum flexibility of usage:** the gravimetric system can be supplied with 2 up to 8 modular dosing stations of various capacities. Additional stations can be added according to specific clients requirement.

**High dosing precision and repeatability at every single batch:** the powerful and quick control system guarantees an accuracy of  $\pm 0.3\%$ . The slide gate device allows a dosing percentage of 0.5%.

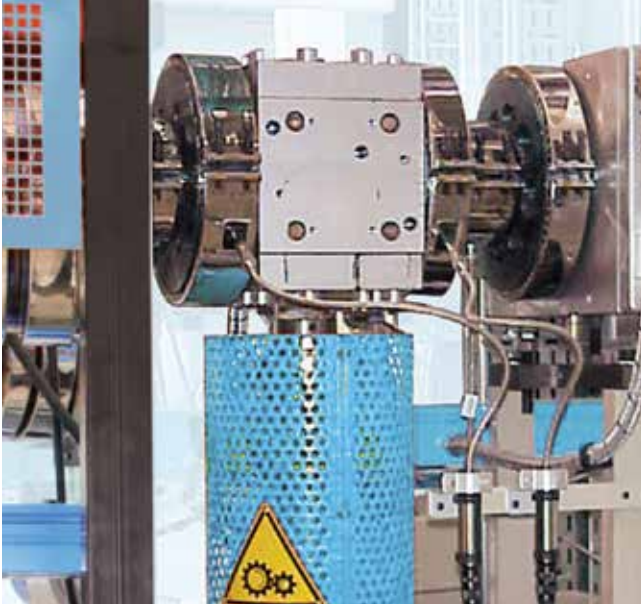


## EXTRUDERS

N.EXT single screw extruder  $\varnothing 30 - 45 - 75$  mm - L/D 36  
medium screw speed technology

- ✓ Higher productivity
- ✓ Less energy consumption
- ✓ Very good process stability and melt homogeneity
- ✓ Very fast self-cleaning
- ✓ High percentage of regrinded material possible
- ✓ Special AC water-cooled motors





**MELT SCREEN CHANGERS** with double pistons filter the melted material, also with the extruder in running mode.

**MELT PUMPS** for continuous volumetric dosing of the melt and ensuring a perfect tolerance and stability of the sheet flow.

**FEEDBLOCKS** are available in a number of configurations, from the single layer up to 3 or more layers in combination with sheet dies.

**FLAT DIES** are designed for the best melt flow with a flexible lip for minimal corrections of the sheet thickness.



# RIMMING machine



## Rim Rolling machine model B1400

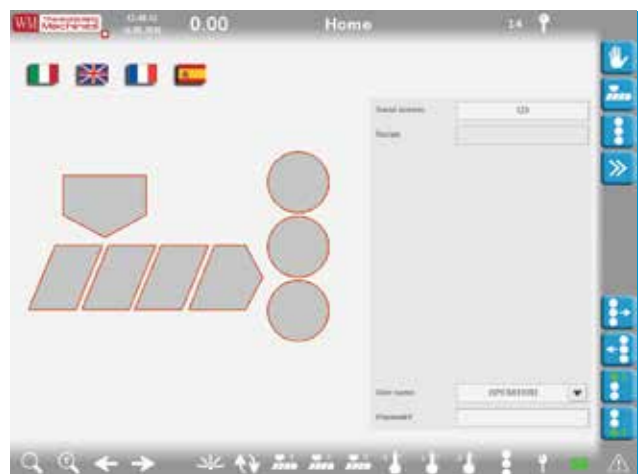
WM's automatic rim rolling machinery is designed and manufactured to rim PP, PET and PS cups up to 200.000 Cups/hour and are offered to clients who are looking for improved product quality of their conical cups or containers.



The rimming process rounds off the edge by folding the lip under the rim. The result does not only provide a more comfortable contact when drinking from the cup but at the same time provides a greater rigidity to the product.

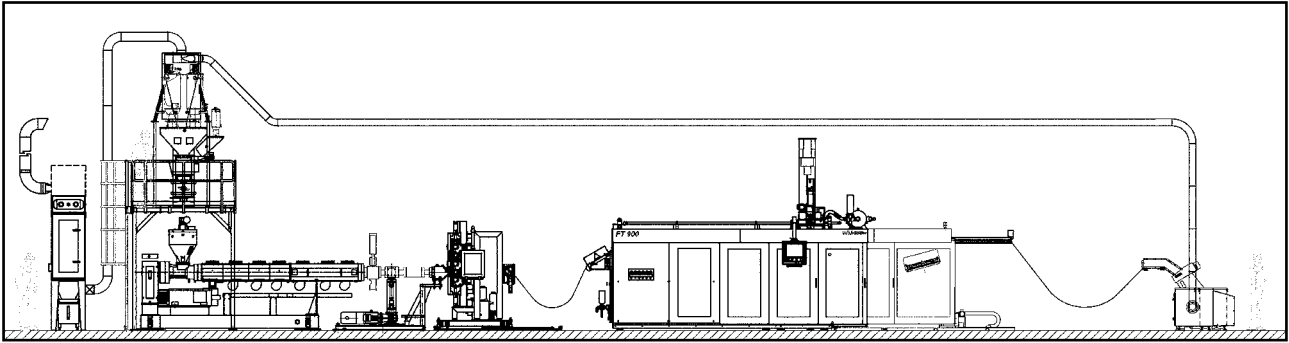


# Last advanced generation drives and control system



- ✓ The system is based on an extremely reliable and well tested B&R industrial PC and Drives
- ✓ IN-LINE special functions for easy start-up
- ✓ High speed data exchange for best cycle time
- ✓ MLS System (Machine Learning System ) for initial self-setting of the cycle parameters and stacking synchronization to optimize machine sequencing to increase output and product quality
- ✓ Integrate cooling system with temperature monitoring to insure stable and safe process
- ✓ Clamping force monitoring
- ✓ Energy recovery
- ✓ Energy consumption and drives analysis
- ✓ High speed modem connection to facilitate any aftersales technical support.

# INTEC 500 / 700 / 900



## INTEC 900 for PP-PS products (120.000 cups 70 mm per hour)

The INTEC 500 / 700 / 900 have been designed to satisfy the demands of medium and high outputs of PP and PS disposable cups, yoghurt pots, ice-cream and margarine containers with mono or multilayer sheet structure. The sheet extrusion group is completed by an FT pressure forming with lower tilting platen and an in-mold cutting tool to ensure closed cutting tolerance and high performance





The plug movement on the upper forming platen is controlled by a servomotor and provides a homogenous and controlled distribution of the material inside the mould cavities.

Different speed and time setting of the plugs can be programmed improving the appearance of the products.

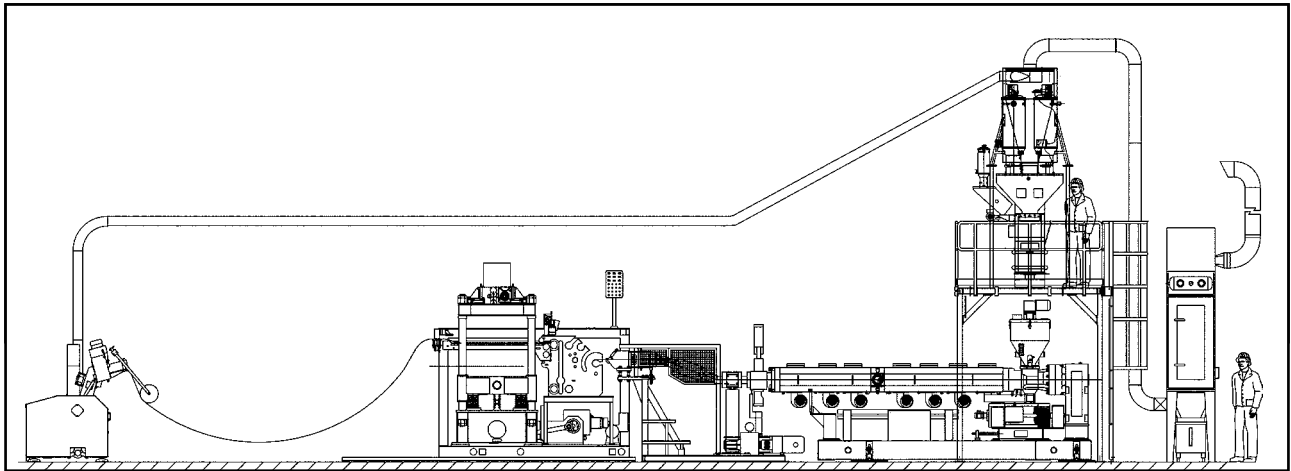


The lower tilting platen turns 75 degrees permitting precise and rapid ejection of the formed products, which are then transported to the stacking unit.

The patented pivot system uses a combination of servomotor driven cams and levers which guarantees an absolute precision of movement. The repeatability and the controlled distribution of the forces during the platen movement and cutting phase of the cycle is also monitored.

Differentiated stacking systems can be supplied according the output, size and the shape of the thermoformed product.

# INTEC 1000

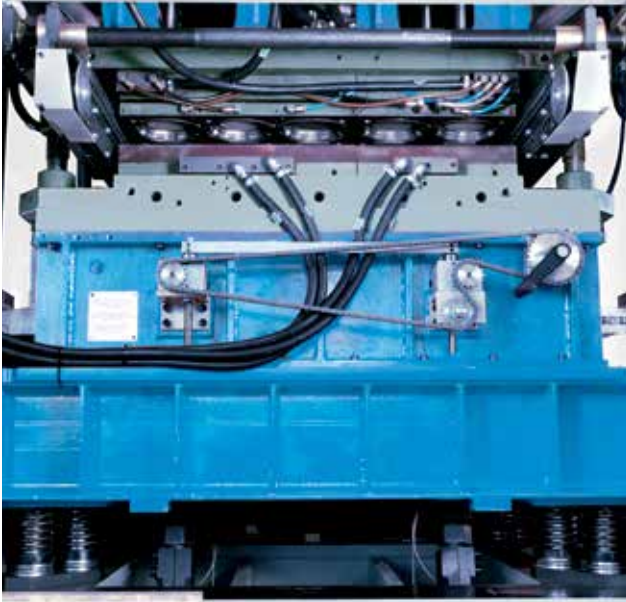


## INTEC 1000

The INTEC 1000 is inline plant specialized to produce disposable **PS plates** with capacity of more than **35.000 HIPS plates/hour** (16 cavities, Ø 220 mm).

The thermo-calender is installed on this forming machine.





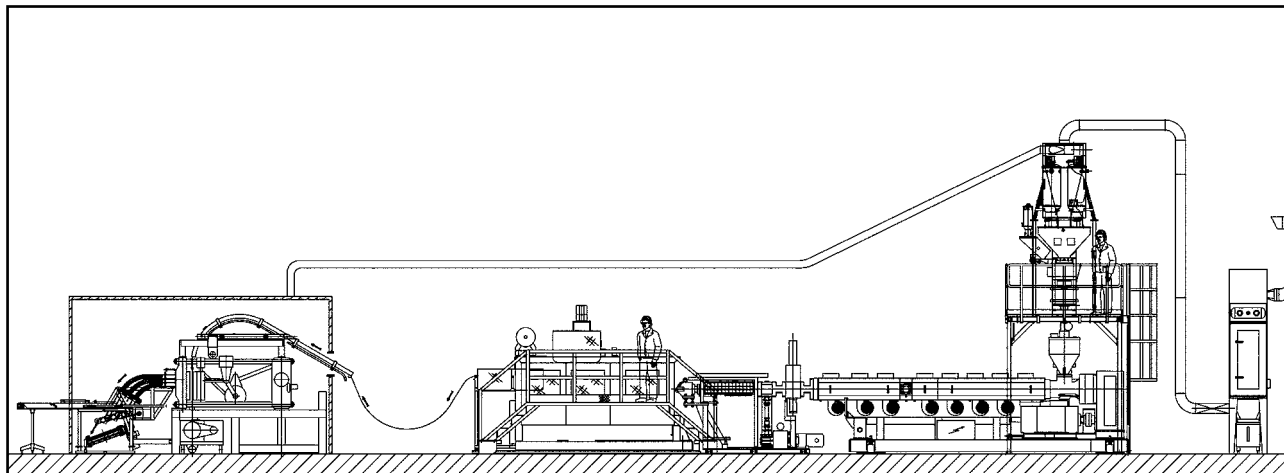
Before entering the forming tool, an infrared optical reader takes the real temperature of the sheet, the reading is visualized on the screen enabling the operator to make all the necessary adjustments. The movement of the lower platen is operated by a rod-crank system driven by a servo motor. An operator platform with push buttons panels is available for all the manual operations control. The skeleton leaves the forming tool and enters into the granulator.



The forming station uses in-mould punching tools. Forming is obtained by vacuum only. The plates are punched down into the lower part of the tool and counted. The entire piles are evacuated on a conveyor belt once the set number has been reached. From the conveyor belt the piles of plates are then transferred to the packaging unit.



# INTEC 1100



## INTEC 1100

The INTEC 1100 is a dedicated inline plant specialized in high output production of PS disposable and vending cups. The output rate  $\geq 200.000$  pcs/hour for 200cc (8 Oz) cups. The line can be supplied with two or more vented extruders according to the cup's specification.

The thermo-calender is installed on this forming machine.





Before entering the forming tool, an infrared optical reader takes the real temperature of the sheet, the reading is displayed on the screen enabling the operator to make all the necessary adjustments. The movement of the lower platen is operated by a rod-crank system driven by a servo motor. An electric servo plug assist is installed on the upper fixed platen and the forming is obtained by air pressure. The sheet with the formed cups is transported to the horizontal trimming press.

Cups are trimmed and ejected into stacking unit while the scrap falls into the grinder installed under the trimming press. The grinded skeleton is directly blown back to the dosing-mixing unit above the extruders. The horizontal trimming press includes a sound proof box reducing the noise level below 83 dB. Once cut, the cups are ejected into collecting channels and the piles are discharged on a conveyor system which transfers the cups to two rim rolling, counting and packaging machines.



*The technical data and the pictures present on this brochure have merely explanatory and indicative purpose. They must be considered as approximate and not binding. The configurations of the machines shown may include optional equipment.*



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