

PRESS RELEASE

NEW PERSPECTIVES FOR IN-LINE THERMOFORMING TECHNOLOGIES

AMUT has successfully tested and delivered to a large North American producer a complete in-line thermoforming plant for the production of disposable cups (size required by the USA and Canadian markets).

The request of the customer presented some very demanding features:

- production of disposable cups both in PS and in PP,
- use of the same lid for the cups produced in PS and PP, after the rimming, assuring a perfect seal to the liquids,
- same cut diameter of 94 mm but with different weight, from 9 to 16 g/ piece, for all 3 products 12 Oz -16 Oz e 22 Oz.

AMUT has found the solution to satisfy the requirements of the customer realizing an integrated in-line machine where all the operations are in-line, automatic and continuous, from the raw material dosing unit to the packaging of the finished product, with an in-line total recovery of the thermoforming skeleton.

The necessity to produce both materials with the same machine resulted in the selection of a thermoforming machine with an in-mould forming and punching technology and tilting platen: the AMP 850 GP model from the AMUT COMI range.

Being one of the largest and fastest machines on the market nowadays, the AMP 850 GP assures to get high outputs, over 63.000 cups/h, and permits to assembly a mould with 33 cavities for cups with a diameter of 94 mm. The production speed achieves the 32 cycles/min.

The plant is equipped with a conveying system designed to handle up to 2,3 mm thick sheet and with a heating oven optimised with a management and control system, properly developed for the characteristics of the PS and PP materials.

The performances of the mould and forming thermoregulation circuit have been bettered and powered, and the management of the thermoforming thermodynamic cycle has been as well integrated and improved with a new control system.

The movement is direct, with high-torque motor of the plug assist unit.

The extrusion section becomes very important because, in particular, is required a foil output of 1300 kg/h when cups of 20 Oz are in production.

The line is composed by:

- feeding and dosing system of the raw materials (dosing at 4 components, one of them, the skeleton grinded material, is run in close loop);
- main single screw extruder, AMUT model EA 130, complete of in-screw dosing system driven by a specific software, with a plasticizing capacity up to 1200 kg/h and a vacuum venting unit complete of water management in close loop;
- single screw co-extruder AMUT model EA 75 for the external layers;
- continuous screen changers and melt gear pump unit both for the main extruder and co-extruder;
- feed block suitable to get foil with different layers configuration A/B, BA, A/B/A without stopping the production;
- extrusion die with completely automatic regulation and control of the thicknesses;
- calibration/cooling vertical calender with rolls of 1000 mm for a homogeneous and efficient cooling of the foil, even at the maximum output (without inner tensions);
- gauging thickness unit and related automatic control systems of the extrusion die.

The thermoforming unit achieves a speed of 40 cycles/min also with the maximum size of the mould (850 x 560 mm) and it is equipped with an advanced mechanical system of the platen movement which reduces at the minimum level the inertias and the problems related.

An automated stacker unit is provided and using vacuum to pick the product which facilitates the start-up operations and permits a continuous and great efficiency in the production as well as with items pretty heavy.

The cups produced are discharged and automatically conveyed to the rimming unit that shapes the edge and calibrate accurately the outer diameter to joint perfectly together the lid. This operation is extremely difficult and needs strict quality checks in running conditions.

The rimming machine is developed to treat both polymers, PS and PP, with special screws of rim: the 4 screws have an adjustable position with the possibility to change the diameter of the rim in inlet and in outlet.

The plant terminates with a packaging unit: the cups can be packed in rows of 20-100 pieces, or in Twin Pack (pair rows of 50-100 pieces).