

▶ **COMPOUNDING LINES** ◀

**CONTINUOUS AND DISCONTINUOUS MIXING**

Located in Castellanza, Varese (Italy), Pomini Rubber & Plastics began building machinery for plastics in 1946. Since 2007 it is a part of Possehl Group as Pomini Rubber & Plastics Srl. The machines built by Pomini for the polymer processing field are discontinuous and continuous mixers (tangential and intermeshing), single/twin-screw extruders and different types of



**Pomini Compact Compounder CC150/200 with water-ring pelletizer**

pelletizing heads (water-ring and under-water). Pomini's technology for continuous mixing of plastics is represented by the Long Continuous Mixer (LCM) and the LCM with Axial Discharge (LCM-AX). The LCM is a counter rotating tangential double supported mixer that feeds a single-screw extruder for vacuum venting, degassing, pumping and pelletizing (double stage equipment). The LCM-AX is a co-rotating intermeshing twin screw mixer (single stage equipment). These equipments are for the production of masterbatches with polyolefins, styrenics and engineering polymers. Common characteristics of the two mixers are the mixing sections based on rotor shaped elements characterized by a medium-high shear (500-1000 s<sup>-1</sup>) and a limited residence time. Those characteristics, combined with a unique in-line pre-blending action, have been set to obtain high degree of dispersion (black masterbatches up to 60% Carbon Black, white MB up to 75% TiO<sub>2</sub> and talcum, hyperfilled compounds up to about 90% of CaCO<sub>3</sub>) with high capacity (from 1000 kg/h up to 10000 kg/h). Due to these facts Pomini LCM represents a leading technology in white and black compound and this technology has been already selected from the biggest

worldwide producers of plastics. For discontinuous mixing of plastics Pomini's technology is represented by the Tangential Internal Mixer (PX) and the Variable Clearance Intermeshing Internal Mixer (VIC). The PX is the state of the art of the traditional tangential discontinuous mixer based on rotor profiles. The VIC is based on a different conceptual idea, i.e. the intermeshing discontinuous mixer. Its main feature is the increased surface area for heat exchange and therefore the improved temperature control in the batch. Most of the producer of special compound both in rubber and plastics industry are moving towards this new technology that allows them to process more efficiently the product. The improved results are such as most of the materials that were unprocessable on the standard tangential technology are now processable in the intermeshing one. Even in the case of "standard" materials, the intermeshing exhibit superior performances in the sense that the cycle time is reduced and the productivity is increased and this is combined with an improved temperature control. Peculiarity of our patented VIC intermeshing mixer is the possibility to change the clearance between rotors during the cycle time. This powerful tool adds a really important parameter at disposal of the process engineer that can modify the dispersive and distributive mixing characteristics on the fly during production.

▶ **ROTATIONAL MOULDING** ◀

**A FULLY AUTOMATIC SYSTEM FOR WATER TANKS**

Since September 2006 Persico has manufactured and sold 4 Leonardo Tank models, two of which in Australia and the other two in the United States, each of these tanks having similar features for the production of tanks with various capacities going from 2000 to 6000 litres. The strong point of the two "American machines" lies in the creation of a multilayer product, which is able to guarantee structural properties by means of recy-

clad plastic material, resulting in a remarkable cost-minimization of the finished product. Before taking into account the Leonardo technology, the customer had tried to obtain the same piece on traditional machines with unsatisfactory results. Thanks to the Leonardo machine the customer is now able to produce really competitive high quality pieces in terms of cycle time. Malcolm Baird of the Precision Poly came over from Australia to visit the Persico company during the tour organised by ARMA (Association of Rotational Moulders Australasia) on September 2006. On this occasion he saw the Leonardo machine (fully automatic rotational moulding system) and immediately realised that it would have been the ideal solution for the production of some items such as slim line rainwater tanks. The Leonardo-Precision Poly system has been designed and built for the production of vertical, slim water tanks with 2000 l and 3000 l capacity, which can be used also in the production of other items having maximal dimensions of 2400x2200x800mm. The advantages of this system compared to the use of conventional machines are the following:

1. 35% reduction in cycle time
2. 25% reduction in energy consumption
3. 38% reduction in product weight (thanks to moulding, even thickness of all areas)
4. Increase of the product's mechanical properties
5. Process automation and labour reduction.

The Precision Poly Slim Tanks can be distinguished by the constant wall thickness distribution through all the sections of the tank. This guarantees higher mechanical features when compared to the tanks manufactured by competitors. The particular characteristics seen above, create some problems in the tank's moulding, making it difficult to guarantee a perfect kiss-off and at the same time ensure an even thickness of each tank section.



Leonardo Tank – USA

On conventional machines the mould extremities are covered up, and the heating is concentrated in the central parts: a solution which only implies immense energy dispersion. These conditions are easily solved by the Leonardo technology: the mould is heated directly by means of diathermic oil, allowing for a regular heating of each mould area and guarantees also a differential heating of the different areas according to the structure of the piece to be moulded. Considering the current trend of the water tanks market in Australia (according to ARMA in some areas it is at -80% with respect to 2007), thanks to Leonardo, Precision Poly is able to produce more cost-effective, competitive and qualitative tanks, so allowing the Company to face up to this critical situation, in these hard times. The Leonardo system of Precision Poly is the very first machine installed in Australia, and at the moment a second equipment for the same company is being completed.

▶ **EXTRUSION** ◀

**AIR BUBBLE FILM AND LAMINATING MACHINERY**

State of the art plastic machinery made by Torninova enters the north American market. In fact this family run business since 1969 has put forth a business plan to enter the North American extrusion markets with its air bubble film machinery. A sales organization is in the process of being fully developed and will be located in Ronkonkoma, New York. Gary Anderson is the responsible of the facility. The second step will be to provide parts and service from the New York location. This entry to the market was strategically planned to coincide with the major expansion of a brand new manufacturing and assembly facility that allows for the increased production requirements of North America as well as the expansion Torninova has been experiencing throughout the world. Products offered to the north American market are mainly:

*Air Bubble Film Machinery with In-Line Processing:*

a) Coex Bubble In-Line Processing®: 5 - Layer (AB-CBA) in-line processing for the production of air bubble film with air barrier retention; film



widths from 1250 to 3000 mm; production range from 400 to 600 kg/h

b) Power Bubble In-Line Processing®: single extruder, air bubble film production with in line processing (starting from PE pellets); film widths from 1250 to 3000 mm; production range from 250 to 550 kg/h

c) Polyboll In-Line Processing®: single extruder, air bubble film production with in line processing (starting from PE pellets); film widths from 1600 to 2500 mm; production range: 130-200 kg/h

d) Twin Bubble In-Line Processing®: for in-line production of insulation reflective material (double bubble with aluminum foil on both side); film width: 1250-1600 mm; two cast extrusion dies for double delivery, one for single delivery.

*Air Bubble Film Machinery with Off-Line Processing:*

e) MAC Bubble®: off-line air bubble film production by cylinders heated with diathermic oil (starting from PE rolls); speed of production from 40 up to 60 m/min (according to thickness and quality of the starting films); laminating sections according to customer requirements; film width: 1250-3000 mm

f) Air Basic Off-Line Processing®: off-line air bubble film production by the patented system from Torninova with hot air (starting from PE rolls); speed of production from 15 up to 35 m/min (according to thickness and quality of the starting films); laminating sections according to customer requirements; film width: 1250-1600 mm

g) LAM Lamination Machine®: unwinders according to number of layers to be laminated; laminating stations use hot air and longitudinal welding; film width: 1250-1600 mm.

Furthermore Torninova offers ancillary equipment for the second processing of air bubble film and foam, like the RP® coreless rewinder for: film widths from 1250 to 1700 mm,