

THE PRESS IS SERVED AT "TURNTABLE"

by Giuseppe Cantalupo (Italian Magazine "Industria della Gomma"- October 2015)

Renowned, as a manufacturer of presses for the moulding of thermoplastic materials, Presma, now on the threshold of its eightieth year of operation, can also now introduce themselves as a manufacturer of injection moulding machines for rubber: a path that demonstrates the ability to adapt to new markets, and launch into new sectors, successfully promoting new technologies.

Proof of this is the multi-station injection moulding machine, "Roto R 12" with rotary table, the newest introduction by PRESMA.

The company established in 1937, when the Canziani brothers built their first Injection Moulding machine. Thanks to the initiative of the founders, who gradually over time expanded their product range, found that success was immediate. By 1949 the company produced horizontal and vertical presses for various items and in 1954 built vertical presses for the production of heels, and in a short time grew its reputation proving Presma to be a reliable manufacturer of presses for the moulding of thermoplastic materials.



These are just some of the many stages, too many to list, that mark the success of innovations and improvements to the products made by Presma, but one machine represents the historical turning point and importance, the path along which the future production of Presma will develop, and will mark the distinctive character of the machines from this company: the realization of a vertical press with a turning table on which more moulds are installed, with the primary purpose to increase the production capacity.

One machine, instead of multiple single station machines. It was in the early sixties, the multi-station press with more rotating clamping units, was born. It was a totally new concept for its time, an innovation that proved immediately successful and shows what will be the unique line of PRESMA machines.

The company and the machines for the rubber. Yesterday and today

PRESMA, located in the quiet greenery of the Olona Valley, occupying a total area of 20,000 square meters, of which 8,000 are covered. It has more than 50 employees and a yearly turnover of approx. 8 million euro.

It has always been a family business, and is currently controlled by the heirs of the founding Canziani brothers: Giorgio (Technical Manager), Franco (Sales) and Enrica (Export Dept.)

We met with both Franco Canziani and the Project Manager and Technical Sales Executive Daniele Rassega. With them, we discussed, particularly Presma in the rubber industry and the latest machine born to the company: the press Roto R 12.



In short retrospective, we confirm the company is putting its decades of experience in manufacturing injection moulding machines for thermoplastics, into the construction of vertical and horizontal injection moulding machines, with and without columns, both for rubber, solid and liquid silicone. In 2009 PRESMA established its "Rubber Division", which produces important machines in terms of technology and size.

We are talking about models manufactured to specific customer requirements, special machines built to meet specific needs of moulders:

machines which celebrate the company's ability to perceive and realize the best technological solutions to the problems that are presented.

Franco Canziani recalls, as an example, the tie-bar less press model 1600-6000-3 RV-S, three vertical injection moulding units for solid silicone. "A machine unique and original in its kind – says the manager -, with a clamping force of 16,000 kN and injection volume of 6,000 cm³ with a specific pressure of 1,890 bar and injection capacity of 208 cm³ /s. A giant of considerable size and weight - about 185,000 kg - suitable for moulding large parts. Its modularity, continues Canziani - replicates several times a basic "C-frame" structure, which allows to mould items of a certain length in one piece, without having to connect smaller parts. An example of these moulded products, are the electrical insulators made in silicone. The machine realized by Presma, allows the customer to produce a four meter long part in just one shot instead of two different 2 meter long parts that have to be welded together .

Another example of a rubber machine built by Presma - always reported by Canziani - is the horizontal injection moulding machine PRO 400/1000 F for rubber and solid silicone, with a 4,000 kN four tie-bars clamping unit and 1,000 cm³ FIFO injection unit with a specific pressure of 2,000 bar. This machine, equipped with a number of features designed to meet specific customer requirements, was successfully presented for the first time at Plast / Rubber 2012 in Milan.

Today the firm of Gornate Olona turns its attention, regarding the rubber branch, to totally different machines, made with new criteria, released by the cliché of the traditional line and also capable of saving energy and material. Roto R 12 is the first example.

The Roto R 12

This is the rotary table machine with which PRESMA completely "turns the page" and definitely changes its profile and the extent of its presence in the scenario of manufacturers of machines for rubber injection moulding.

Roto R 12 is born from PRESMA's experience and from the sharing of ideas with Daniele Rassega, a new employee in our Torba facilities.

With thirty-year experience in the rubber sector, Rassega, saw in the PRESMA rotary machines for thermoplastics, the possibility



of applying the same technology to rubber moulding. "Why for plastics and not for rubber?" He must have been wondering... Convinced of the value of the project, he put himself at the disposal of the company in the development of this project, which to tell the truth, is not new for Giorgio Canziani, the PRESMA co-owner and Technical Manager, since recently, a rotary 4 station for liquid silicone has been developed and built.

This engineer is the right person for Giorgio and his management, that have in them the DNA inherited from the company founders, the ability to change as well as the predisposition to search for that special new technology, that will allow their customers to solve their problems in a new way, possibly improving their production.

The results start to show. With the collaboration of mould makers and compound producers, Roto R 12 soon becomes a reality. A new machine of its kind which has been successfully presented for the first time on the international stage of DKT rubber exhibition in Nuremberg, which was held from June 29th to July 2nd, 2015, arousing a great deal of interest from customers.

What it is and how the new machine works

It is a specific model of the rotary injection moulding machine for rubber products. "The name says it all - explains Canziani - Roto R12: 12 - station rotary injection moulding machine for rubber".

What does it mean? It means that the press is the miniature representation of twelve traditional single-injection moulding machines, but with the difference that, after injection into a mould, it is not necessary to wait until the compound vulcanizes to eject the finished product and then to start over with another injection. This is simply because, with the mould still closed, the table turns and the next mould is now in the injection position. This is the same for all stations that are mounted on the carousel.



At the end of the cycle (means one complete round), the process of vulcanization of the injected material in the first mould is complete, the mould opens and the finished product is ejected into an appropriate container". Of course, the injection timing of the compound and of the carousel rotation are calculated in such a way that, at the end of each cycle, the injected part of each mould is cured and, therefore, ready for unloading.

The timing of the process is surprising: the cycle lasts 5 seconds, which means that in this very short period of time the carriage moves forward towards the mould that is already in position, the compound injection takes place and the carriage then moves back. Meanwhile, the table turns and moves the next mould into position, all achieved in less than 2 seconds. When the machine is up to speed the discharge of each moulded part occurs every 5 seconds; with a single mould machine, the expected cycle time is about 30 seconds. Basically, only two shots a minute are achievable with a standard machine, with the Roto R 12, twelve injections are made in a minute!

A significant difference in terms of productivity.

A perfect machine, with precise automation, controlled by a high-level software to manage and optimize any technical problem or situation. "If, for example, a mould already in place, before the sequence has a problem operating, - explains Rassega - the machine does not inject, it skips that station, and the process continues regularly with the other moulds. Meanwhile, the system is put into pre-alarm. If the fault is still present when the same mould returns to the injection position, - continued the coach - its station skips back and the table continues to rotate, but at the same

time, the system goes into alarm and when the mould with the problem is back in front the nozzle, the board stops so that we can carry out the necessary adjustments to remedy the situation". The machine that we have seen in Presma, a prototype, was equipped with moulds for the production of O-rings made of NBR at 16 cavities, for O-ring 14 x 1.78 mm, and at 36 cavities, for O-ring 10.85 x 1.78 mm.

Other advantages

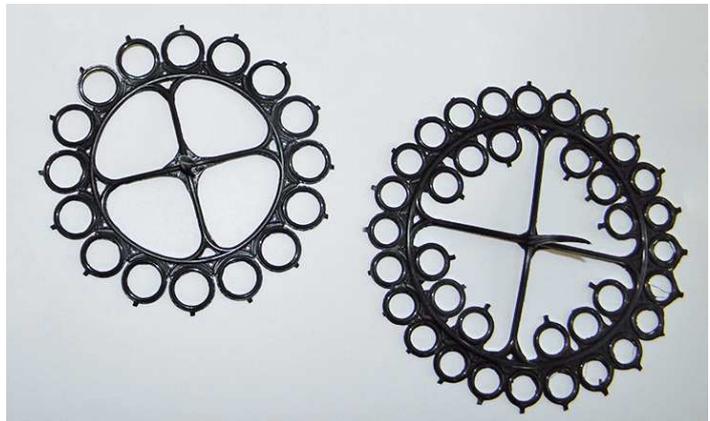
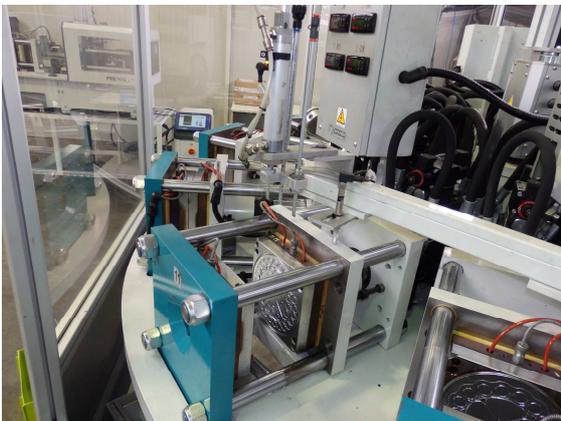
In addition to higher productivity just described, the durability of the moulds allows the production of different items with the same machine and with the same cycle. Obviously, using the same compound. "But - points out Canziani - as the machine can be equipped also with two injection units, it is possible, with this machine configuration, to work simultaneously with two different materials and to inject with the same press items of different size and shape".

So, Roto R 12 is definitely a machine of great flexibility and the benefits on productivity can be even more by increasing the number of stations. For example, increasing them up to 18.

Important advantages, are made on the business front regarding the savings that this press allows, energy consumption and rubber usage. Suffice it to say, with regard to the latter factor, each injection moulding of O-rings, made of NBR, requires just 6 grams of compound.

With the same configuration, calculated on the total moulds mounted on the rotary press, the moulds of this machine are much smaller than the moulds mounted on a mono-station press that reports more times the same group of cavities and consequently has shorter and smaller cross section flow channels.

This means, they fill more easily and entail a lower consumption of material limiting the formation of burrs and minimizing the volume of the feeders. In addition, the limited dimensions of the moulds allows the material to vulcanize at a lower temperature: 185 ° C against 200-210 ° C of the conventional press. Which can only be beneficial to the rubber composition in terms of reduction of stress.



The main characteristics

This machine has a direct cylinder closing group, each provided with two levels of heating of 160 x 160 mm each. The maximum distance between the planes is 140 mm, the closing force is 118 kN and the distance between the columns is 165 x 165 mm..

The injection assembly, equipped with thermo-regulated nozzle, is a reciprocating screw with rotation driven by a hydraulic motor. The screw has a diameter of 25 mm and an L / D = 15.

The injection volume is 59 cm³ and the specific pressure injection of 202 MPa.