For.El.: setting the standards in the I.G. market

Requirements and quality requested by the double-glazing industry are getting more and more complex. One of Italy's machinery makers for this sector, For.El., explains how it meets these strict requirements with some of its products for the sealing of double-glazing panels, which operate in two different stages.

For.El., Treviso, north-east Italy

*Tommaso Pascucci**

FOR.EL. SPA

For.El. S.p.A. is an Italian company founded in 1976, which, over the years, has become famous worldwide as a producer of machinery for the double-glazing industry. Customer requirement solving, along with the experience and skill of For.El. engineering, and with the addition of the design department know-how, lie behind the results the company has constantly achieved all over the world.

For.El.: setting the standards in the I.G. market

SEALING OF DOUBLE-GLAZING PANELS

As far as final product quality is concerned, it is well known that a good sealing process influences the properties of double-glazing panels. Sealing is, in fact, an important and tricky phase in the production of excellent double-glazing panels and, in the long run, means less deterioration of the insulating properties and, consequently, energy and cost saving.

The panel has to go through two different stages in order to be finally sealed. During the first stage, we assist to the application of a butyl seam on both sides of the whole perimeter of the spacer profile. The panels are then coupled and pressed together and ultimately become ready to go through the second phase, consisting in the mechanical sealing of panels by either one or two components sealants.

The first stage

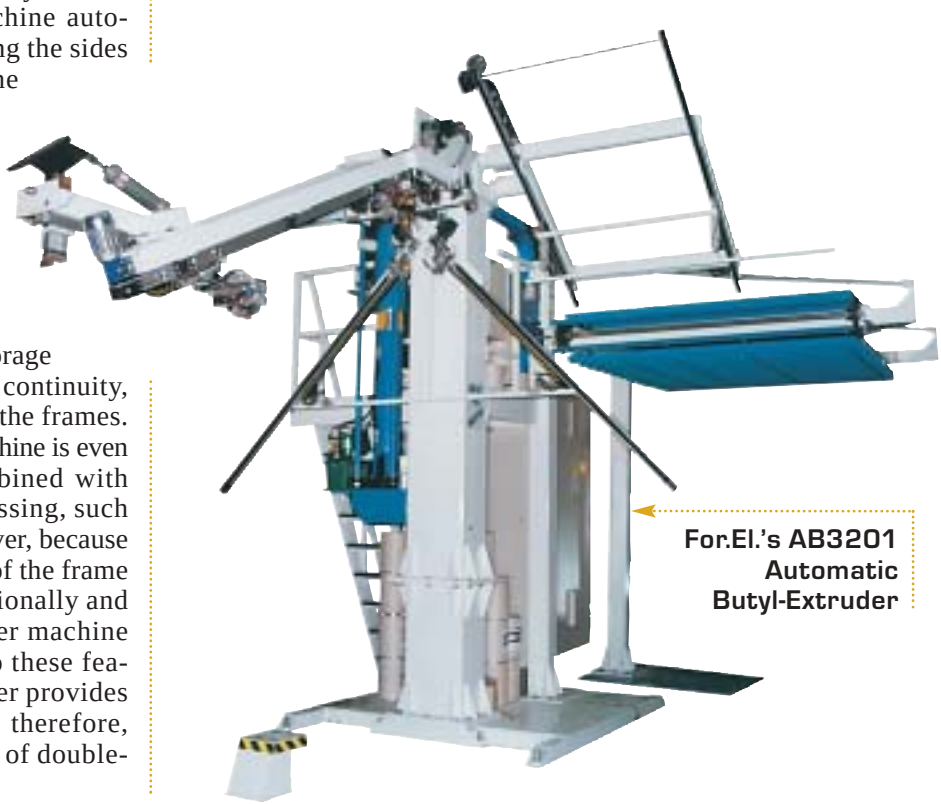
Concerning the first stage of sealing, For.El. has two different solutions, which include automatic and manual machines, both able to achieve excellent results. For.El. *AB3201 Automatic Butyl-Extruder* stands as symbol of For.El. high technology. The machine automatically spreads a butyl seam along the sides of the spacer frame, preventing the butyl from getting in contact with machine parts or with external agents. Once the thickness of the profiles has been detected, the distance between the nozzles automatically adapts to it. Moreover, the quantity of extruded butyl may be regulated by a special software program. Two storage devices, which provide production continuity, grant the loading and unloading of the frames. The excellent automatism of this machine is even further enhanced when it is combined with For.El. machines for profile processing, such as the *PBN632* and *DFN632*. However, because of its great versatility and because of the frame handling outfitting, it can be functionally and productively linked up to any other machine available in the market. Thanks to these features, the Automatic Butyl-Extruder provides the best product application and, therefore, high quality in the sealing process of double-glazing panels.

The For.El *MB7501 Manual Butyl-Extruder* offers – by mean of an operator – the same result achieved by the Automatic Butyl-Extruder. The operator has to support the spacer frame while butyl is applied and, in the case of odd shapes, make it rotate on the extruder nozzle.

As one can imagine, the Automatic Butyl-Extruder is suitable for glassworks with very large production volumes. As a matter of fact, its excellent performances – compared to the required investment – are better exploited in large companies.

The second stage

Nowadays, there are several kinds of glazing panels, such as traditional double-glazing panels and triple-glazing panels, passing through shaped and stepped panels. At the same time, there may be the need of sealing with diverse sealants, which change according to customers' specifications. For.El. engineers have realized special methods in order make the second stage of panel sealing as faultless, but, at the same time, flexible as possible.



For.El.'s AB3201 Automatic Butyl-Extruder

The For.El. Automatic Structural Sealing Machine

For.El. *SA1320 – SA1325 – SA1330 Automatic Sealing Robots* carry out the final sealing of double or triple (optional) glazing panels with one or two component sealants. A special sensor, located in the in-feed conveyor, detects the main features of the panel, such as: rear glass thickness, frame thickness and finally the total panel thickness. According to these parameters, a PLC controlled program regulates the working process. The innovative and accurate sealing robot spreads the sealant evenly along the whole perimeter of the panel. A special pad carries out the correction and finishing of the corners. These features make the automatic sealing robot a functional, high-tech machine and give an excellent sealing quality to the finished product.

For.El system for the sealing of triple-glazing panels – compared to the traditional machines – is carried out in two steps, one for each spacer. In this way, each spacer receives the same quantity of sealant, since the real depth of each spacer frame is measured by a feeler pin in every single phase. Therefore, possible improper positioning of the spacer frame between the glass panes will not affect the final result of the sealing process.

FURTHER PRODUCTS

Another machine in the For.El. product range is the *SA1420 – SA1425 – SA1430 Automatic Structural Sealing Machine*. This robot works, not only with traditional double-glazing panels, but features as options the possibility to process triple-glazing panels, as well as stepped structural glazing panels. This machine enables to seal stepped double-glazing panels up to 100 millimetres on just one or all four sides. The reading of the offset at the base enables the positioning of the mobile drive units on which the panes run during the whole process. During the extrusion along the perimeter of the pane, a specific system spreads the sealant evenly over the entire offset surface, thus achieving excellent aesthetic results.

HOT-MELT SEALING ROBOT

The success met with hot-melt sealant in the United States and in United Kingdom. has convinced For.El. engineering team and design department to provide customers with a new solution, different from the traditional sealing process. This is the reason why the first Hot-Melt Automatic Sealing Robots - *SAHM20 – SAHM25 – SAHM32* - were put into production. The robot can be used for the final sealing of the double or (optional) of the triple-glazing panels with sealant directly extruded from a pumping unit, such as the *For.El. HM1200*.

Thanks to the different solutions offered by For.El. sealing robots, the sealing of double-glazing panels can now be considered as completely automatic. Therefore, the operator has just to unload the final products from the production line, using the *For.El. 810 Manipulator*. ■

**Export Manager*

FOR.EL. SPA
Via per Monastier, 4
31056 Vallio di Roncade (TV)
Italy
Tel: +39 - 0422 - 840507
Fax: +39 - 0422 - 840900
E-mail: forel@forelspa.com
www.forelspa.com