Since the establishment of the company in 1966, Bystronic Lenhardt GmbH has been developing and producing complete solutions for the manufacture of insulating glass. The company’s expertise lies in innovative solutions for the efficient manufacture of glass for buildings. In collaboration with Siemens, Bystronic Lenhardt has developed a modular manufacturing line for insulating glass windows, the so-called sash’line, characterized by the highest levels of flexibility and productivity.

**Coordinated manufacturing line with intelligence**

Sash’line consists of a series of individual machines that carry out a wide range of tasks: application of drying agents, simultaneous application of sealant/adhesive on both sides, cleaning of glass panes, and joining of frames and panes, as well as injecting and filling the composite with gas. Every machine, consisting of SIMOTION D445 and a SIMATIC industrial PC, features its own intelligence – for reduced hardware and coordination work within a SIMOTION Handling Toolbox.
The machine module as well as simpler interplay of the components. The latest OPC-XML technologies are used for data exchange, enabling high data transfer rates. In addition to the assembly, the most demanding parts are the applicator stations for the drying agent (SashTri™) and the adhesive (SashSeal™). The adhesive station is simultaneously powered up from both sides by electronically synchronized linked axes. This enables not only linear travel but also as many curves as required. In this way, customized special windows can also be manufactured in the smallest batch sizes.

**Highly dynamic and precise**

The technical requirement for the implementation of assembly and application is the TopLoading standard library, developed for handling applications with SIMOTION, which enables highly dynamic and precise path movements of the applicator heads. From just a few polynomial descriptions calculated in the CAD system, harmonically smooth and highly dynamic path movements are interpolated – in particular for changes in direction at corners. The rotation of the applicator heads when changing direction is linked to the motion via an electronic disk cam. The motion speed at the corners is thereby adjusted and optimum sealing is achieved at every point of the window profile by selective application of more or less sealant.

**Easy programming and engineering**

SIMOTION TopLoading is the standard library for high-end handling. The advantage for the user: less programming work on engineering and in application. With programming in the high-level language Structured Text (ST), the application can easily be upgraded. An easily operated ST-editor ensures efficient troubleshooting. The machine manufacturer can also use the diverse scripting possibilities with SIMOTION – for example, for the largely automated parameterization of projects or identical axes, or for version administration. The Handling Toolbox is topped off with visualization tools that allow for a threedimensional presentation of Kinematics, for example. In this way, every machine can to a great extent be programmed, tested, and optimized in advance.

**Handling with SIMOTION – advantages at a glance:**
- Highly dynamic and precise path movement of applicator heads
- Efficient engineering with standardized software
- Kinematics already integrated within the system
- 3-D visualization tools

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