



Visualization makes its mark

When it comes to technological maturity, Müller TB's machines for aluminum window construction leave nothing to be desired. They demonstrate a high degree of automation, as well as a high-quality standard. The Swiss machine builder also scores with innovative operation and a clever drive concept. Behind both attributes lies automation technology from the Salzburg manufacturer SIGMATEK. The highlight thereby is the web-based visualization, which was implemented with the new "LASAL VisuDesigner".

From Mag. Ingrid Traintinger

Why a Swiss manufacturer of machines for window production has recently started relying on Austrian automation technology.

Müller TB Technologies was founded at the end of the 1960s by the father of the current CEO Urs Müller. The family-owned company designs and builds high-quality machines and equipment for insulated aluminum frames, which are used for manufacturing windows. With its headquarters in Kanton Zurich, Müller TB has around twenty employees and delivers to production companies around the world. "We provide our customers with targeted, competent and professional advice and support. We see ourselves as a manufacturer with a high awareness of quality, supporting and strengthening our customers with innovative and advanced solutions.", explains

Urs Müller: "We distinguish ourselves from the competition first and foremost, through a high degree of automation." The production process for aluminum window frame manufacture is divided into several operations: From knurling (pressure forming process), through rolling (cold rolling process), brushing and seal installation. In Müller TB's systems, these processes are highly automated. So that the various sizes and frame types can be changed automatically, a profile management system (PVS) is also needed. With this system for example, stops and tools are positioned according to the selected window type. It provides maximum flexibility, as the formats are set automatically using servo drives and the interruption in production is therefore minimized. The newest PVS generation is called "PVS-SG3" and is – just like the rolling and knurling machine – equipped with an automation solution from SIGMATEK. This consists of a control, servo drives and a web operating panel – including visualization, which was programmed with the LASAL VisuDesigner. The tool is built on popular web technologies such as HTML5, CSS3 and JavaScript and because it is platform-independent, it proves to be highly flexible.

New Approach to Automation

With a fully automated system for aluminum window manufacturing, the profile management system is an essential component for flexible production with short changeovers. With each change to a different window profile, the stops and tools must be repositioned. Depending on the machine, actuator drives with up to 16 axes assume this task. The main demand on these drives is not the high dynamics, rather the space requirements, robustness and reliability take priority. In previous versions of the profile management system, these were stepper motors with integrated drive controllers and CAN bus connection. A fully equipped production line with the "PVS-SG3" can include around 40 servo drives together with the winder and knurling machines.

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The Swiss machine builder Müller TB builds equipment for the fully automated processing of aluminum frames for window production.



The switch to SIGMATEK was made because the manufacturer of the previously used products discontinued them – the existing solution also became relatively expensive. Not only did implementing the new control platform present a challenge, but also the required backward

Above: The “DC 061-1” servo modules from the “S-DIAS” component series from SIGMATEK require very little space in the control cabinet.

The “AKM” low-voltage servo motors with resolver feedback for speed and position, also used here, are an ideal fit for these axis modules. On request, the motors are also available with a hold brake.

Operating Interface with Modern Visualization Software

A special constellation emerged during the visualization: Müller TB agreed to use the then brand new “Lasal VisuDesigner” with HTML5 technology as a beta tester for programming the user interface. Beat Meili, Manager at SIGMATEK Switzerland, added: “For this complex but also extraordinarily comfortable user interface with visualization, recipe management and high



Beat Meili (l.), Executive Manager of Sigmatek Switzerland, discusses possible expansions of the operating interface created using the “LASAL VisuDesigner” with Urs Müller, Owner of Müller TB.



The new operating interface provides a comfortable overview of the line and fast help in the event of a disruption.

compatibility so that the older stepper motor technology could be integrated into the new control environment. After a detailed evaluation phase, Sigmatek was selected as the overall system provider. Urs Müller explains: “One of the decisive points was the readiness to present the products in practical application on site. The manufacturer’s high competence was thereby clear and a relationship of trust was quickly formed. The 48-VDC servo regulators were also a deciding factor, as they were very compact and proved ideal for our application.”

Drive Solution in the Tightest Space

The compactness of the drive solution from Sigmatek amazed the team at Müller TB. In the concrete example with the “PVS-SG3” machine, 16 “DC 061-1” servo axes, as well as the “S-DIAS” control and a supply unit find space in a 1,000 x 500 mm control cabinet. The servo add-on modules measure 12.5 x 104.2 x 72 mm (WxHxD) and can be mounted on a standard DIN rail. They provide up to 6 A of continuous current and a peak current of up to 15 A, and that with a supply voltage of 48 VDC.

flexibility, this solution approach was obvious. We are pleased that Müller TB chose to be a beta tester for the real-world application of the “VisuDesigner”. When you look at the result today, you see, that it was worth the effort.” The clear and comfortable operating interface demonstrates what is possible with the new “LASAL VisuDesigner”. Entering and storing data for a new profile is fairly simple for the operator. Since an external drive can be connected, practically unlimited profile recipes can be stored.



Beat Meili sees a clear win-win situation in implementing the operating interface: "SIGMATEK engineers at the headquarters in Austria continually expanded the functionality of the "VisuDesigner" parallel to the project. The advantage here was that they met the current requirements and were tested in practice. The open systems architecture enables the programming of customer-specific controls, which are precisely tailored to the customer's needs. In the end, Müller TB received a fully developed operating interface at a previously agreed fixed price. A special feature is the integration of an additional servo axis through the visualization. The user does not require a separate programming tool, instead, the additional drive can be simply placed on the operating interface via Drag&Drop, configured and saved. "That is already a fine thing", praises Urs Müller. "This shortens the initial start-up of the system – and that reduces the related costs. Visualization over a standard web browser brings additional advantages in remote maintenance for Müller TB and its end customers.

The "S-DIAS" DIN rail servo module "DC 061-1" measures only 12.5 x 104.2 x 72 mm and provides up to 6 A of continuous current and a peak current of up to 15 A.

Engineering Support Directly from the Manufacturer

Since Müller TB does not have in-house software developers, the engineering team from Sigmatek Switzerland took over implementing the demanding application. For Urs Müller, local support is very important. He summarizes: "The project development was largely seamless. From the beginning, we knew that there were several hurdles with the visualization to overcome and were also informed of this by SIGMATEK. The support worked flawlessly. How quickly SIGMATEK reacted to the component shortage with a

redesign especially impressed us. In terms of delivery times, the company is way ahead compared to other manufacturers."

Further Development toward IoT

The production systems from Müller TB are continually developed further. Urs Müller sees the greatest potential in the functions for IoT. "In the future, we want to move even further in the direction of digitalization. I.e., recording and evaluating production data and using it to optimize our products and processes. Predictive maintenance is also an increasingly important topic. It is in our interest to provide machines that have as few interruptions as possible and thereby increase customer satisfaction." ^(TR)

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