

The best technology for Swiss production

The small, round devices can be found on the ceilings of many hotels and public buildings: fire detectors. At the company Insys Industriesysteme AG in the Bernese town of Münsingen they are the focus for a short time: The SME builds an assembly system with which Siemens Building Technologies (BT), headquartered in Zug, Germany, will manufacture fire detectors – of course with components from Siemens.

On the different stations of the new assembly system, we can observe how fire detectors are built. The basic support is fed to the system manually - then the automatic takes over. The electronics board is set-in at the start of the assembly line. The support is turned over and placed on the rotary indexing table. There, eight stations mount the other components: 1-2 light-emitting diodes, a photodiode, as well as the shield plate and the lens. These emit a different light, which is redirected by the lens to the electronics. The electronic board is the heart of the fire detector: it analyzes the incident light and detects when it is changed by smoke. In this case, the fire detector triggers an alarm.

High precision in production

The construction of the assembly system was launched in the middle of 2016. Marc Luginbühl, CSO at Insys, explains: "We developed the assembly system together with the responsible persons of Siemens. Initially, only a rotary indexing table was planned, we have now implemented a complete assembly system that can be expanded modularly".

According to M. Luginbühl, the automation of certain steps of work was quite complex: "The delicate electronics board must be broken out of a support and assembled.

The handling of the light-emitting diodes was also demanding." "All these steps require a high degree of precision" says Markus Lanz, sales engineer at Siemens and responsible for the project: "We created a new FMEA (Failure Mode and Effects Analysis) location production in terms of the line production and the assembly process, which we evaluated together with the suppliers and defined counter measures. Even in the Design Review, risk-evaluated processes were reassessed and the complexity of the assembly was decoupled by adding an additional station."

Fully automatic production

Speed and reliability are central aspects to the production of fire detectors: in maximum configuration, the new system automatically produces a fire detector every 4.8 seconds. In order to make the installation faster, more flexible and less expensive, only electric axes have been used, without any pneumatic component.

This also reduces energy consumption. Automation stations for lid assembly and packaging will be added later. Thanks to the modular structure of the assembly system, the manual feed of the basic support can also be automated.



Siemens components for a Siemens factory

The system is operated via mobile 4-inch KTP400F panels from Siemens. The panels communicate via Profinet and are completely IP65 protected. Safety Integrated guarantees the safety of the system. With TIA Portal, Siemens provides software components that simplify programming considerably. M. Luginbühl is enthusiastic: "The panel has all the necessary functions. In addition, it is aesthetic, modern, compact and very attractive. We may use the panel and other Siemens components more often in the future."

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Head of Sales bei Insys

By using the Siemens Product Lifecycle Management (PLM) platform Teamcenter, construction data is easy to manage. Efficient development across company boundaries becomes possible. Of course, the TIA Portal can also be integrated into the Teamcenter.

In the future, the system will be connected to the EDP system of Siemens Building Technologies. The continuously exchanged data can be used for quality assurance or order planning. These data analysis options open the way to the demands of Industry 4.0 and the Internet of Things.



When constructing the assembly system for the fire detectors, the new, mobile 4-inch panel from Siemens has been used for the first time.

Technology in brief

The assembly system uses the new 4.3-inch KTP400F mobile panel. The panel impresses with its high functionality, compactness and flexibility. The panel can be used to operate the numerous other installed Siemens components: from the Simatic software controller through safety circuits to the Simatic ET 200SP peripheral modules. For optimal management of the data the Siemens Product Lifecycle Management (PLM) platform Teamcenter is used. ↗ siemens.ch/hmi



Insys

Insys Industriesysteme AG (member of the Smart Automation Group) manufactures special machines for the medical and electronics industry, the luxury industry and the automotive sector. In addition to assembly systems such as those for the fire detectors from Siemens Building Technologies, the 70 employees in Münsingen near Berne also develop grinding, polishing and testing systems. ↗ insys.ch

Siemens Building Technologies

Siemens Building Technologies (BT), headquartered in Zug, is a division of Siemens AG and employs around 1700 people. BT is a leading provider of automation technologies and digital services for secure and efficient buildings and infrastructures. The division offers products, solutions, services and software for fire safety, security, building automation, heating, ventilation, air conditioning and energy management. The new production building with a surface area of 20,000 m² is used for the manufacture of products in the field of building technology (air conditioning, fire detection, etc.).

↗ siemens.ch/bt