The Polish company Zaklady Plytek Ceramicznych Przysucha S.A., a manufacturer of ceramic products from natural materials, has produced high-quality finished goods since 1972. “For a long overdue expansion of our production facility, we have invested in a completely new production line for the manufacture of brick products,” reports Marek Szymkowiak, managing director for corporate development and investments. Where about 30 to 40 t of brick per day were produced previously, the new plant has enabled the company to make another 70 t per day since the summer of 2013. An extrusion process is used to produce the ceramic brick plates. In the production line, which is more than 100 m long, a homogeneous compound of various raw materials is processed and pressed through extruder dies. These raw bricks subsequently run through a drying and firing process before being packed and prepared for dispatch. “In consideration of this huge investment, it was decisive for us to have a reliable partner at our side that would be able to design and build the entire plant and to also support us with regards to service,” explains Szymkowiak. This is why Keller HCW, a leading supplier of complete plants for heavy clay production, headquartered in Lower Saxony, has been entrusted with the project realization. Josef Schröter, head of the electrical engineering, automation, and process engineering department at Keller HCW, describes the situation: “Ceramic producers demand extremely high availability from their plants. Integrated automation solutions such as Siemens offers with Totally Integrated Automation (TIA) are perfect for that.”

Keller HCW GmbH, Germany

Clear advantage for brick production

In a new production facility for quarter bricks in Poland, Keller HCW GmbH implemented a new uniform operating and visualization concept for the first time. In addition to achieving savings in construction and installation, engineering costs were also reduced with the help of the new TIA Portal engineering framework.

The engineering framework TIA Portal convinces in the new brick production facility in Poland through greatly simplifying the entire engineering process since all editors are accessing one common database.
Intuitive and user-friendly HMI

Some significant innovations have been implemented for the first time in the Przysucha project. One example is the use of innovative KP8F Key Panels on the operator panel within the production line instead of conventional long-travel keys. The advantage is obvious for Schröter: “With this system we have eight keys available that can be assigned as desired by means of software programming. At the same time, we are able to integrate the plant’s emergency stop button into our safety concept thanks to the fail-safe input of the KP8F.” Communication between the Simatic HMI Comfort Panel and the fail-safe control is carried out via Profinet. At the same time, the 24-V DC power supply can be connected and looped through in the key panel. That makes installation quick and saves not only wiring but also space, time, and costs as compared to a key button solution. With the help of the integrated Profisafe communication, information is forwarded reliably to the fail-safe Simatic S7 control when the emergency stop button on the operator panel is pushed. Separate emergency stop contactor combinations can be completely eliminated, and all the system diagnostics are already integrated into the hardware and software, ready for operation.

The actual visualization of the plant is realized using Simatic HMI Comfort Panels with touch function, which can be easily integrated into the communication structure of the brick production line via Profinet. With their high-resolution widescreen display, these devices are the perfect solution for the very detailed visualization of subprocesses, parameters, and diagnostic messages that are made available automatically via the control. Szymkowiak concludes: “Our colleagues in the production department are very happy about the intuitive and user-friendly operation that both the Key Panels and Touch Panels provide.”

Consistency in engineering

For the first time ever, to complement the innovative solutions for the operation and visualization of the plant, the project team at Keller HCW also used the innovative TIA Portal engineering framework to connect the new Comfort Panels to the Simatic controls. The first step was to continue configuring the controls with Step 7, but the aim is to migrate PLC programming into TIA Portal completely to save even more time in the future. Schröter is very excited about the possibilities of this new software. While the previous routines with familiar tools are retained for operation, all editors in TIA Portal are accessing one common database. To integrate the KP8F Key Panels, for instance, it was only necessary to select the appropriate unit from a given list and to assign the desired parameters to it. The same applies for the Comfort Panels and the other Siemens devices within the plant automation system. “As a result, the time-consuming transfer of information from one program to the other is now a thing of the past,” says the head of the department. Even safety-related applications can be developed more easily in parallel to standard automation thanks to TIA Portal – and as the example of the KP8F Key Panel shows, without great effort in terms of hardware and software, even right down to the field level. Schröter concludes: “Thanks to the porting of the software to the panels we are able to operate all the machines using a single tool.”

TIA is a great success

In the Polish brick production line, Keller HCW implemented significant optimization measures that should subsequently have an effect on many other plants as well. The adoption of operating and visualization solutions in connection with TIA Portal is a clear technical advance for the Polish company and significantly reduces engineering effort. Time savings due to reduced wiring effort and easier plant expansion are just two positive side effects. In addition, downtimes and service times are considerably reduced thanks to integrated system diagnostics – important reasons for Schröter and Szymkowiak to consistently implement Totally Integrated Automation over the long term.

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