

The best of the 90s and the best of today

Retrofit of a laminating line with the latest safety technology

Implementing an electronic series connection of safety components in a laminating line from the 1990s – this was the task that zfr control faced together with BERNSTEIN as part of a retrofit at a customer in the East Westphalia region (Germany). In the course of this modernisation, one or two challenges had to be solved. But in the end, the system not only meets the most modern requirements for safety technology, but now also provides extensive diagnostic data for easy troubleshooting and analysis.

This report begins in Weinsberg near Heilbronn, where the company zfr control has made a name for itself in the fields of electrical design, (PLC) programming and conversion of machine controls. The company itself sees its main focus in wrapping machines and laminating lines. It was the latter that brought zfr control to a customer in the East Westphalia region. There, a laminating line for chipboard from 1996 at Friedrich Priess GmbH & Co.KG in Hille required a retrofit. The modernisation included the replacement of control components as well as safety components. "Troubleshooting should be easier and faster. In addition, diagnostic options had to be created," Jürgen Föll, who accompanied the project for zfr control, summarises the requirement. "In order to also be able to implement a series connection of all components, the choice quickly fell on the SMART Safety System from BERNSTEIN AG." As a supplier of industrial safety and enclosure technology, BERNSTEIN supports its customers in implementing their Smart Factory. The product portfolio ranges from switches, sensors and enclosures to system solutions for operating and safeguarding entire machines and plants.

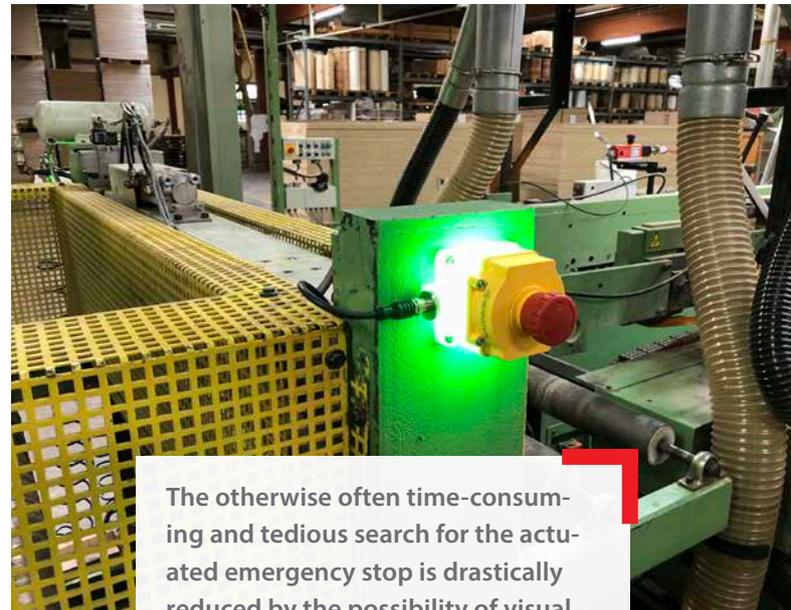


Retrofit of a laminating line from 1996: Among other things, pull-wire switches and illuminated emergency stop devices from BERNSTEIN are now used in an electronic safety chain.

In concrete terms, those responsible decided to use several pull-wire switches. Thanks to the connection box, these could be integrated into the electronic safety chain just as easily as the contactless safety sensors SRF and the illuminated emergency stop devices SEU. Thanks to the large LED status display, it is quickly visible directly on the emergency stop device which has been actuated. "The otherwise often time-consuming and tedious search for the actuated emergency stop is drastically reduced by the possibility of visual perception directly on the device. Unnecessary downtimes can be shortened or avoided altogether by the clearly visible LED display," says Sebastian König, who accompanied the project for BERNSTEIN.

Thanks to the patented daisy chain diagnostic system (DCD), extensive diagnostic data of each connected unit can be evaluated with the SCR P safety evaluation, for example via Ethernet. One such safety evaluation SCR P is used in the main line of the system, as well as two others on movable modules. All installed safety components and the possibility of collecting and evaluating diagnostic data from all units come from BERNSTEIN.

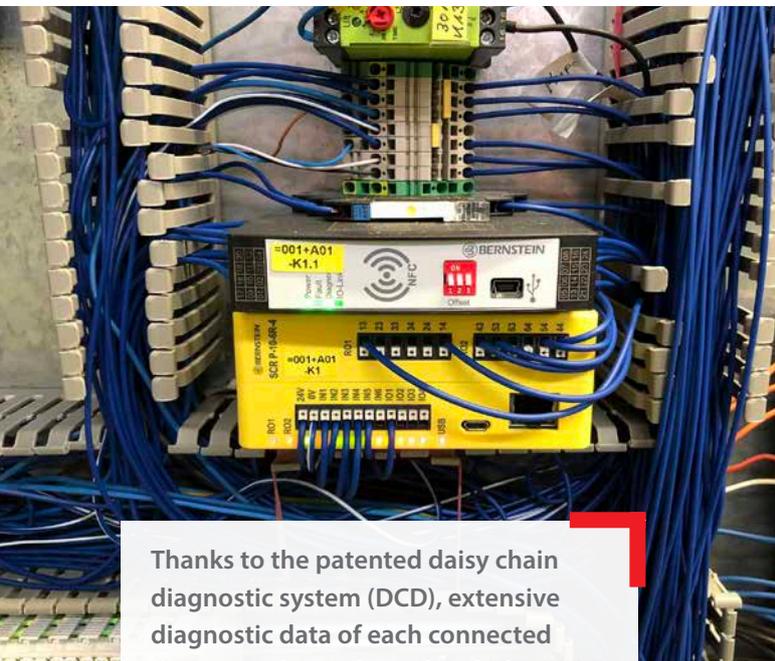
"One challenge was to implement the series connection of all components over the entire length of the laminating line in one piece," says Jürgen Föll. This is because the Friedrich Priess GmbH & Co KG line consists of a main line and two modules – laminating block and gluing machine – which are inserted into the main line. In total, the line extends over about 30 metres, which means that the safety components are connected in series over a total of about 100 metres. „The combination of special line length and at the same time heavier load from illuminated emergency stop devices led to an increased voltage drop in the system. Thanks to the Daisy Chain diagnostic system, however, this could be localised immediately, as each participant in the series connection also transmits



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Have done their job: Since 1996, these pull-wire switches from BERNSTEIN have provided safety and have now been replaced by modern safety components with diagnostic function.



Thanks to the patented daisy chain diagnostic system (DCD), extensive diagnostic data of each connected device can be evaluated with the SCR P safety evaluation, for example via Ethernet. Three of the safety evaluations can be found in the entire system.

its currently applied operating voltage. In the end, we were able to solve the problem quickly and easily with an additional power supply at the end of the series connection instead of a terminating plug," explains Marvin Schinkel. The advantages of connecting components in series outweigh the disadvantages, especially for retrofitting machines and systems. For example, a reduced wiring effort leads to lower costs without having to make concessions in terms of diagnostic possibilities. "The SMART Safety System provides a scalable solution for every customer and every requirement," says Marvin Schinkel.

Just a few days after the retrofit was completed, Friedrich Priess GmbH & Co KG's conclusion was positive. Among other things, the diagnostic option has greatly simplified troubleshooting in the past few days.



Three of the SCR P safety evaluations are located in the system in order to be able to evaluate extensive diagnostic data. A total of 16 illuminated emergency stop SEUs are used throughout the entire system.