

BEST PRACTICE | EHRMANN SE

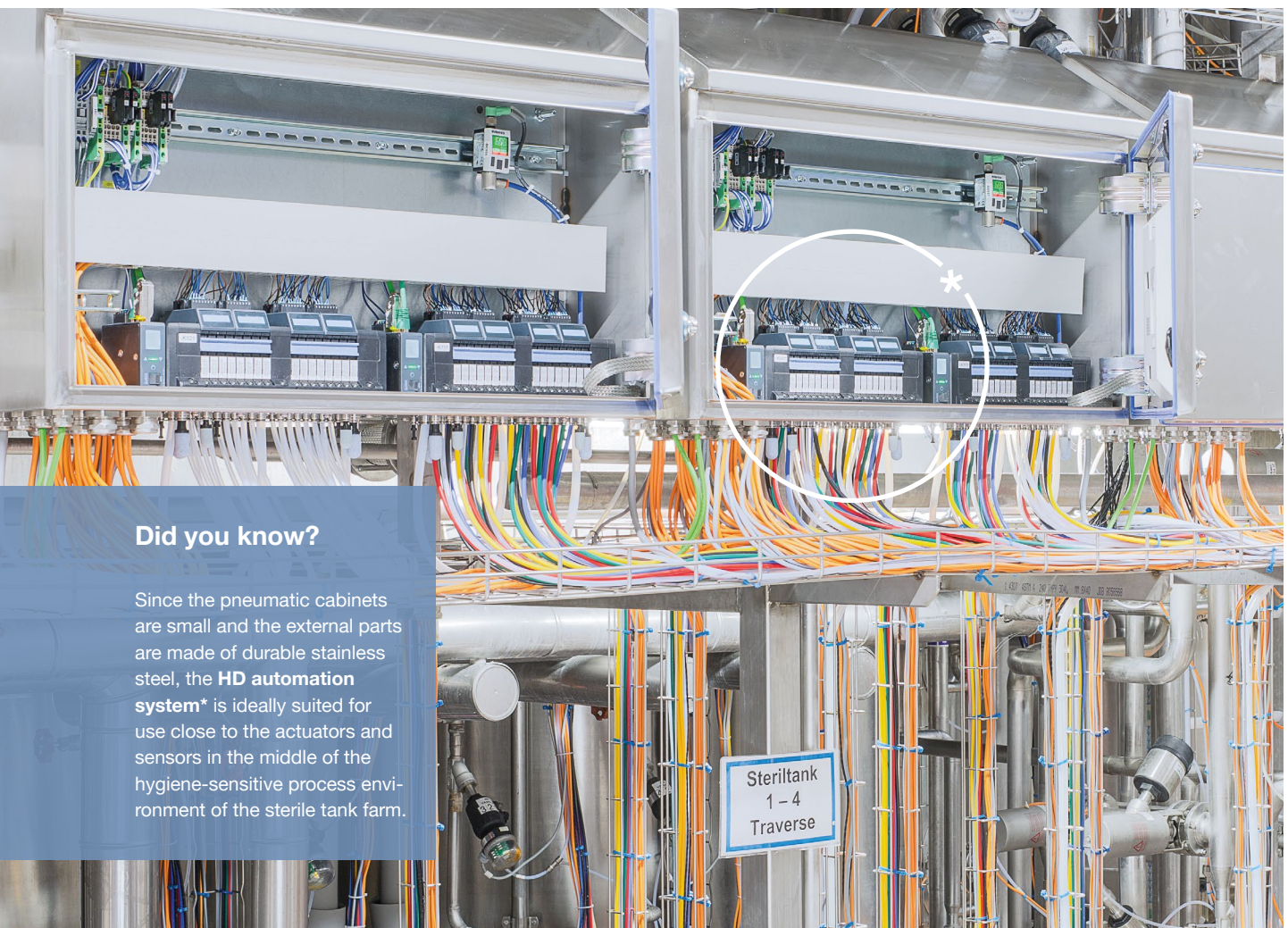
Modernisation of the process pneumatics

Valve islands in the HD control cabinet for sterile tank farms



DECENTRALISED AUTOMATION SYSTEMS IN HYGIENIC DESIGN COOPERATION WITH EHRMANN

Process and procedural systems in the food and beverage industries are usually designed for a long operating life. At some point, however, they too can on in years. And when maintenance intervals get shorter and shorter and spare parts and spare parts get harder to obtain, modernisation measures are inevitable. But these measures can be used to improve overall system structure and that ups productivity. Compact valve islands as decentralised automation systems for controlling pneumatics are a practical solution. With ready-to-connect compact systems in hygienic stainless steel control cabinets, even complex systems can be restructured without causing long downtimes.



Did you know?

Since the pneumatic cabinets are small and the external parts are made of durable stainless steel, the **HD automation system*** is ideally suited for use close to the actuators and sensors in the middle of the hygiene-sensitive process environment of the sterile tank farm.

A dairy with tradition

Ehrmann SE can look back on a long tradition as one of the leading dairies in Germany. In 1920, dairy master Alois Ehrmann sen. founded his dairy as a one-man operation. Since then, the company has continued to develop and now boasts a diverse, high-quality etc a diverse, high-quality product range both nationally and internationally. To ensure that it stays that way in the future, the dairy invests in the development of new products and in the modernisation and optimisation of production facilities. For its 100th anniversary in 2020, the renovation of the process pneumatics in a sterile tank farm at the Oberschönegg location was on the agenda. The system, which takes over the product feed for five production lines, was showing its age. There were frequent malfunctions.

Reinhard Huber, Team Leader, Electrical Engineering:



“Troubleshooting was often difficult because the pneumatic control of the or so 400 process valves was housed in a central control cabinet. Tracking the long cable routes and locating the sources of error demanded a lot from our maintenance staff”.

In the course of the renovation, therefore, not only were components to be replaced and renewed, but the system structure also had to be optimised. All with the aim of increasing productivity and, if the worst came to the worst, simplifying troubleshooting. Decentralised pneumatic control cabinets near the process valves were to replace the large, central control cabinet.

Clearly arranged and without long lines: decentralised instead of centralised

However, the framework conditions for the renovation and restructuring of the extensive process pneumatics were not easy. The production process only allowed short down-times and the space available at the sterile tank system was anything but generous. However, the complex task was mastered thanks to the close cooperation. The pneumatic functions were analysed, then spatially assigned to the corresponding system parts and combined in such a way that they could be accommodated in eight decentralised units on the system. For the decentralised pneumatic control units, the modular valve islands with up to 48 valve functions each with the AirLINE-Quick adaptation were installed and pre-wired in hygienic control cabinets (Type 8614). Other optional assemblies, e.g. filter regulator, pressure monitoring or power supply unit, completed the cabinets. An empty field was also provided for Ehrmann, where additional components could be accommodated. “We particularly appreciate the fact that Bürkert is always ready to listen to special requests when working with us”, says Reinhard Huber.

The dimensions of the pneumatic cabinets are relatively small and all external parts are made of durable stainless steel. This means that the ready-to-connect, tested and certified HD automation system is ideally suited for use close to the actuators and sensors in the middle of the hygiene-sensitive process environment of the sterile tank farm. This significantly reduces the effort required for tubing, because the distances to the actuators are much shorter than before. “Our maintenance staff is also happy about the clarity of the decentralised structure” says Reinhard Huber.

Compact and diagnosis-friendly pneumatic cabinets

All important information about the process, such as current switching states of pilot and process valves or the detection of cable breaks, is available for the user directly on site on the valve islands' display. This data is also forwarded to the system control via PROFINET. The valve islands are equipped with all common pneumatic process safety features as a standard. For example, check valves in the ventilation duct prevent valves being unintentionally enabled by pressure peaks in the ventilation duct. This ensures a high level of process reliability. Thanks to the hot-swap function, valves can be changed while the system is running under pressure and when voltage is applied. This means that there is no production downtime here either.



Valve island type 8652 AirLINE with up to 48 valve functions each.

Quick start-up: Conversion Two-step

Production downtime was a key issue during the conversion. So keeping it as short as possible was a priority. The high-pressure control cabinets with the valve islands were delivered ready for connection and only the compressed air, power supply and bus system had to be connected on site. But that also takes time and manpower. In order to keep downtimes as short as possible, the sterile tank farm was converted in two steps. First, four decentralised control cabinets were installed, while some of the functions could continue to run via the old pneumatic controller. After start-up and successful testing of the first four valve islands, it was the turn of the other four control cabinets. "Our technicians completed the conversion quickly. We lost less than three days in production capacity", explains Reinhard Huber

At Ehrmann, the technical staff carried out the retrofitting themselves. In the sterile tank farm, there wasn't enough room for additional technicians due to the limited space available. If required, the Bürkert service team can also support the user in this start-up phase.

Take advantage of a diagnosis-friendly and low-maintenance solution:



Fast start-up: Thanks to the ready-to-connect compact system, plant restructuring can be implemented without long downtimes.



Reduced maintenance costs: The hot-swap function avoids production downtime, because individual valves can be changed while the system is running under pressure and when voltage is applied.



Custom solution: Special solutions, such as an empty field for additional components, ensure the necessary flexibility.



Seamless monitoring: A quick overview of the system function thanks to forwarding of the process data via PROFINET to the valve island display and the system control.

“Working closely with Burkert, modernising the complex process pneumatics went quickly and smoothly.”

Reinhard Huber, team leader for electrical engineering at Ehrmann



WE LEARN FROM YOU EVERY DAY – INCLUDING WHEN WE THINK OUTSIDE THE BOX.

When it comes to dealing with liquids and gases, Bürkert has become the partner of choice all over the world. Why? Probably because we have been learning for and from our customers for more than 75 years now. This enables us to always think that crucial step ahead. Or even around the corner.

We make ideas flow.

For your added value. Let us prove it to you – we look forward to your challenge.

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