



**DANONE GMBH**

**The smart way to achieve  
greater plant safety**

Pneumatic valves for safety-related shutdown

We make ideas flow.

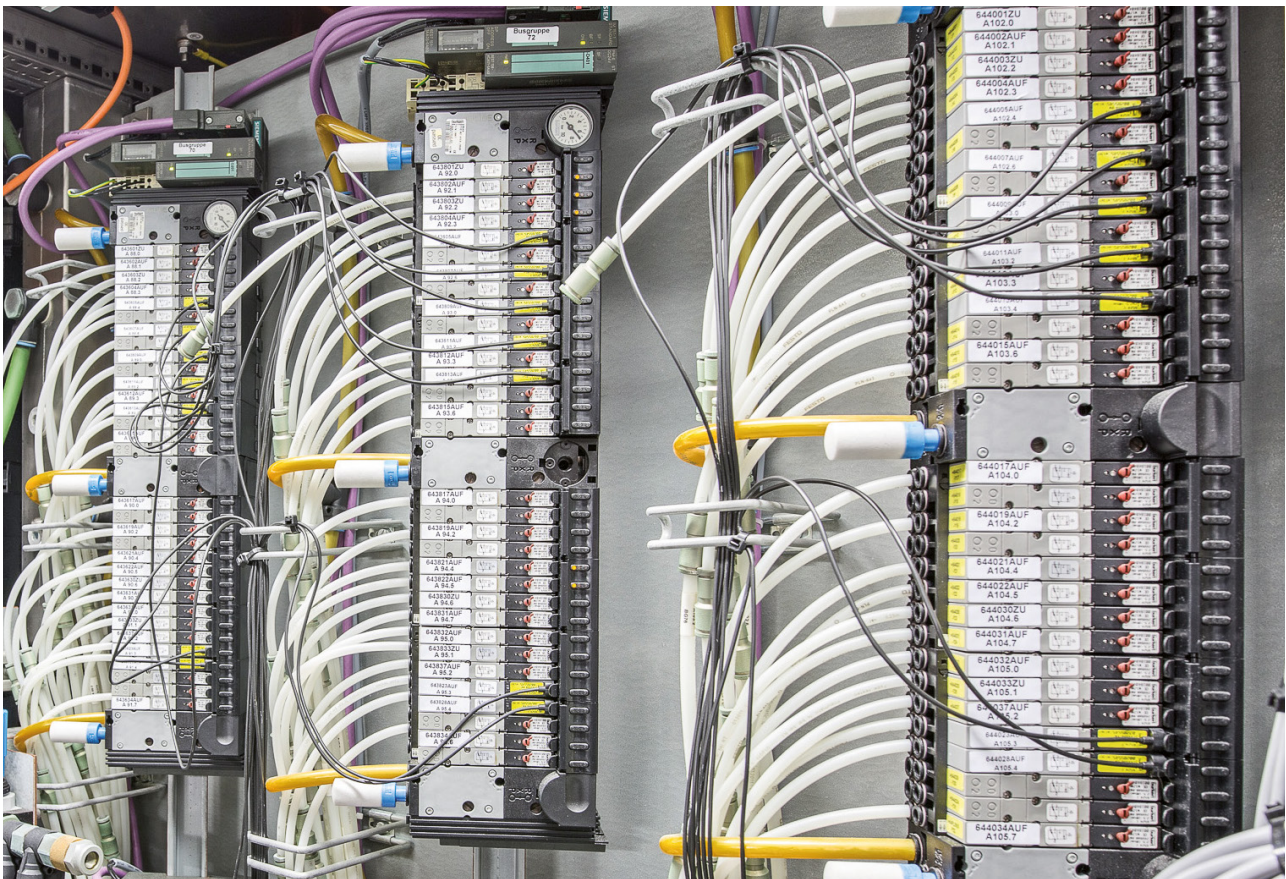
**bürkert**  
FLUID CONTROL SYSTEMS



# Cost-effective retrofitting

## COOPERATION WITH DANONE

In process technology, automated plants are designed for long-term operation. Safety requirements nonetheless change over time. Today, the minimum requirements placed on machinery and plant safety standards are regulated by Machinery Directive 2006/42/EC. Hence, certain performance levels must be met according to the plant design to achieve adequate protection for the life and health of workers, e.g. when working on pipelines, valves, connecting pieces, or similar. Danone GmbH at the production site in Ochsenfurt in southern Germany was able to easily retrofit the desired safety standards in the existing plant - thanks to the new Bürkert valve types for safety-related shutdown.



## Did you know?

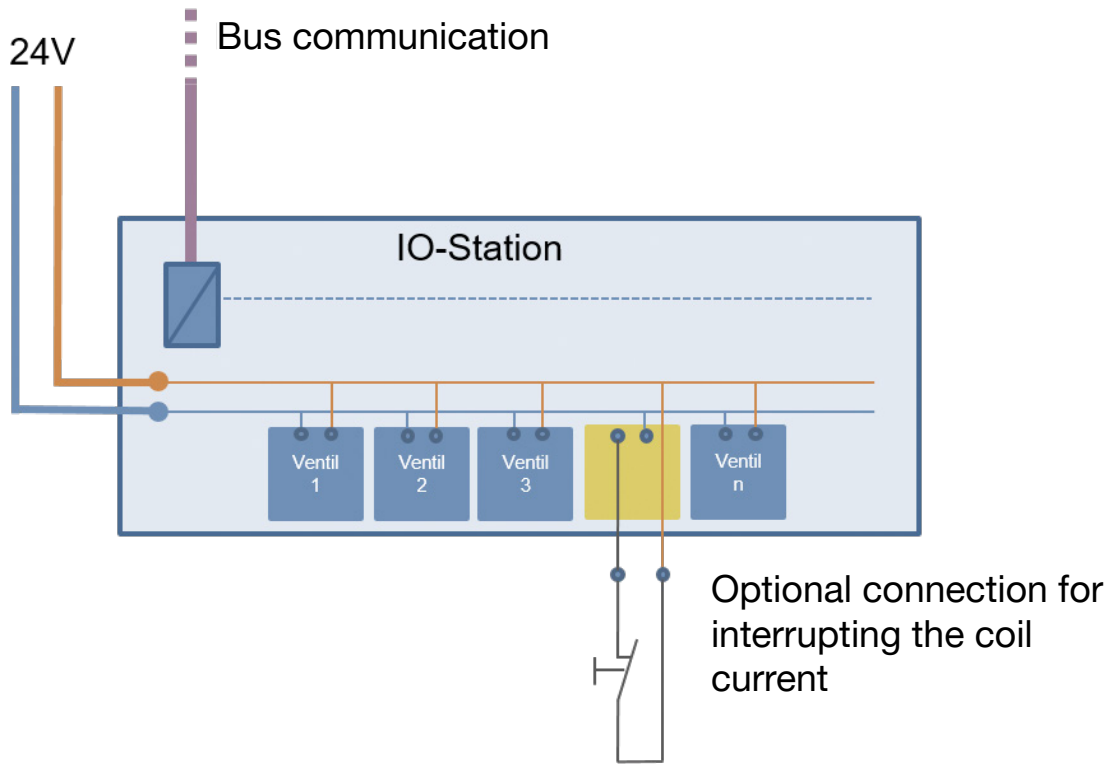
**With the new valve types for safety-related shut-off\*, the desired safety standard can also be easily achieved in existing systems. Simple retrofitting significantly reduces the installation effort and costs compared to solutions with Profisafe protocol and fail-safe I/O modules.**

### **At its site in Ochsenfurt,**

Danone GmbH mainly produces yoghurt and desserts for the German market and for export to neighbouring European countries. To meet the new safety requirements for maintenance, repair and cleaning work, changes to the safety concept were required at a plant that was installed several years ago. The existing safety standards were already very high – emergency stop switches were, for instance, secured by locking mechanisms against accidental reset in the event of a shut-off. In addition, certain valves in the widely branched pipe system between the 16 tanks and the six filling lines could be switched off from the controller via PROFIBUS. The plant operator nevertheless wanted to enhance the level of safety for its workforce. The aim was to achieve Performance Level C, which is relatively high for this application. Guaranteed safety was very important to the management team, particularly for the performance of cleaning work. Cleaning agents containing acids and bases that heat up to 80°C are used during cleaning processes. If a pipeline section is not properly shut off, e.g. when cleaning used sieves, or if an electrical or mechanical safety measure is bypassed, members of staff could be severely injured.

### **The practical alternative**

The previous installation consisted of a decentralised peripheral system from Siemens (ET 200S) and appropriate, integrated pneumatic output modules from Bürkert, which are installed in the vicinity of the process inside stainless steel control cabinets. These Type 8644 valve islands can control electric and pneumatic signals via a bus line. The aim of the enhanced system was to reliably exclude the risk of certain valve functions being activated unintentionally via PROFIBUS due to a control error when workers are carrying out necessary tasks on-site at the pipeline system. Typically, such requirements are resolved using a PROFIsafe controller, the PROFIsafe protocol and respective fail-safe IO modules. This type of retrofitting is expensive however, due to unwanted downtime and the costly replacement of numerous components. But there was a practical alternative: The respective valve functions can also be shut off safely and directly on the existing valve island – that is on the pneumatic modules at the ET 200S – if the valves here are retrofitted with an additional connection for safe shut-off.



The patented shut-off function is implemented via a second connection via which the power circuit of the solenoid can be interrupted.

### Simple function – great impact

The new Type 6524 and Type 6525 pneumatic valves with additional shut-off function can be shut off independently of the regular switch signal control of the valve island. Valve integration is possible at any valve slot on the valve island.

The valves consist of a pilot flipper solenoid valve and a pneumatic seat valve. The flipper action system allows the switching of high pressures combined with low pow-

er consumption and short switching times. The patented shutoff function is realised via a second connection. The valves are still controlled via the bus but additionally offer a second electric connection via which the power circuit of the solenoid coil can be interrupted. When triggering a safety chain, the normally closed contact of an emergency stop relay shuts off the coil of the pneumatic valve, irrespective of valve activation by the PLC.



### Increase performance level

Performance Level D can be achieved by additionally integrating a redundancy block. The redundancy block features valves and pressure switches that are installed pneumatically and in series downstream of the valves on the valve island.

Integration of the pneumatic valves for safe shut-off is possible at any valve slot of the valve island. Thanks to the shut-off function, processes can be shut off reliably up to Performance Level C in accordance the Machinery Directive.

## Take advantage

of the safety-oriented shutdown:



#### Reliable plant safety:

The new pneumatic valves can be shut off independent of the regular switch signal control of the valve island.



#### Flexible retrofitting:

Integration of the valves is possible at any valve slot on the valve island. Un-desired downtime and costly replacement of components are avoided.



#### Reduced space requirement:

Application of pneumatic and electric components in the control cabinet is reduced thanks to the new valves. The size of the control cabinet can thus be smaller than in the past.





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The clever retrofit solution has meanwhile proven itself in operational use. Staff safety when working on the extensive pipeline system has been increased significantly and the operator is happy with the results.



You can find out more about this project at:  
[www.burkert.com](http://www.burkert.com)

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