

## **Stop the steam: Bürkert's flow control system reduces energy costs at aerospace plant**

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**At a specialist aerospace equipment manufacturer in Portsmouth, an initiative to reduce energy costs identified steam energy usage that could be optimised. Dart Aerospace involved Bürkert's engineering team to develop a system that could automatically close steam flow during non-operational periods. This custom-developed flow control system was set live in January 2025 and achieved return on investment in a matter of months.**

*Paul Hobden, Account Manager at Bürkert UK, reports.*

Dart Aerospace designs and manufactures mission-critical equipment, primarily for helicopters, as well as fixed-wing aircraft. The global organisation's UK operation is based in Portsmouth, and the plant manufactures systems including flotation devices that achieve buoyancy for emergency landings on water, as well as auxiliary fuel cells.

Machinery crucial to its manufacturing process includes presses that form rubber and polymers into the required shape, as well as spreaders that apply a sealant and bond over an additional layer of material such as Kevlar®. Various machine types and sizes are required according to the part in production, including 21 presses and spreaders. All the machines are steam-driven from a central boiler that powers the large press room via a series of ¾" and 1" steam lines.

## **Steam shut off**

Manufacture of Dart Aerospace's products is specialised, rather than mass produced, and normally involves day-time operation rather than round-the-clock production. Each press produces between 8 and 20 moulds per day, and the machines aren't all in simultaneous use. In fact, some of the most specialised machines can be on stand-by for more than a day at a time. However, steam flow to the machines was, in many cases, continual, even when the machines weren't in operation.

Although each press and spreader had its own valve to regulate flow, the steam to each machine wasn't regularly shut off at the end of each day. Operating the hand wheels that closed the valves could be physically demanding, and some of the valves were in difficult to reach positions, requiring working at height access, which meant a time-consuming process. To remove these barriers, Dart Aerospace's Maintenance & Engineering Team wanted an automated system to control steam shut off that would reduce unnecessary usage and minimise costs.

To develop the control system, the on-site engineering team engaged with flow specialist Bürkert. The remit was to design a system that could automatically turn off the steam supply at the close of each day, while still allowing individual machines to be turned back on as required during the following work shift. This would allow the operation of any press or spreader as required, while ensuring the steam supply remained closed to any machine not in operation.

## **Flow system design**

With all but one of the machines fed by a single ¾" or 1" steam line, Bürkert's engineers specified a Type 2000 angle seat valve for installation on each machine to provide on/off steam control. While high flow rates are achieved with a virtually straight flow path, the angle seat design ensures a compact footprint. When closed,

the self-adjusting packing gland provides high sealing integrity, and the stainless steel, maintenance-free design provides long life.

Each of the on/off angle seat valves would be controlled by a Bürkert Type 6524 pneumatic valve to allow reliable, high-pressure switching. The pneumatic valves would be centrally located on a Bürkert Type 8652 valve island and switched with a 24V supply. This centralised system using pneumatic hoses was selected to provide a significant cost reduction and simplifying future maintenance compared to installing a control head for each angle seat valve. Meanwhile, the Type 8652 valve island enabled simple integration to the wider system's Ethernet network.

To operate the system, the valve island integrated with an HMI control panel installed alongside, running a programme that was custom-authored by Bürkert's UK engineering team. The HMI touch-screen display could open or close the steam supply to the individual machines, while the control system was also programmed to close all steam lines at 6pm each day. Each machine could then be manually switched on by an operator at the start of the following shift.

### **Rapid ROI**

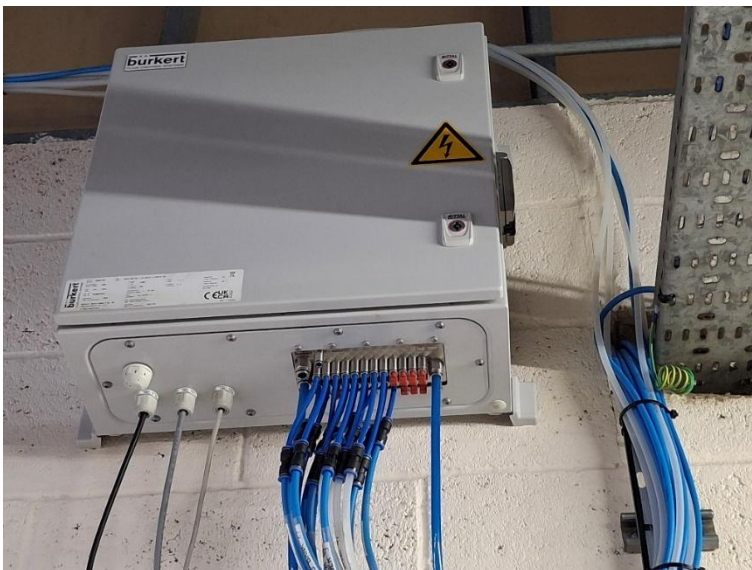
The initial on-site discussion at the Portsmouth plant took place in September 2024. With Dart Aerospace's usual contractor unable to complete the installation of the angle seat valves on each machine, the company's M&E team, led by Tony Foster, completed the project during the Christmas shut down of 2024. During this period, the custom valve island was built at Bürkert's Germany headquarters and delivered to Bürkert UK for programming, with an interface developed to optimise ease of use. System commissioning and staff training at Dart Aerospace took place on the same day, and the system was set live in the following January.

Now in January 2026, 12 full months on from commissioning, the Bürkert system is returning an energy saving of approximately 25% on a month-by-month basis. This

reduction is compared to the three previous years of operation, which had an equivalent level of operational productivity. As a result, the energy savings in the first half of 2025 alone demonstrated a rapid return on investment.

**Image captions:**

**Image 1:** The centralised control panel includes an HMI touch-screen to enable individual machine management.



**Image 2:** The Type 8652 valve island is housed in a protective cabinet and controls the Type 6524 pneumatic shut-off valves.

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## About Bürkert

Bürkert Fluid Control Systems is one of the leading manufacturers of control and measuring systems for fluids and gases. The products have a wide variety of applications and are used within food & beverage, pharmaceutical and water industries as well as in medical engineering and space technology. The company employs over 3,700 people and has a comprehensive network of branches in 36 countries world-wide.”

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