

Tradition benefitting from technology: Controlling the brewing process

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The food and beverage industry is continually evolving, driven by the need for enhanced efficiency, quality, and safety. Central to these advancements is fluid process control, a crucial component in manufacturing processes such as mixing, fermentation, and pasteurisation. Recent innovations in this area have focused on precision, automation, and sustainability, significantly improving production practices.

Kieran Bennett, Industry Account Manager, Food & Beverage, for Bürkert, looks at the recent innovations in process control and the benefits they bring to the industry.

The brewery industry exemplifies the positive impact of recent developments in fluid process control. Modern breweries employ advanced process control systems to manage every stage of beer production, from mash preparation to fermentation and packaging. Automated systems monitor and adjust the flow of ingredients, ensuring consistency in flavour and quality. Precision sensors control the fermentation temperature and pressure, crucial for producing different types of beer.

Process accuracy

As one of the simplest and most common examples, it only takes a deviation of a couple of degrees during mashing or fermentation to have a noticeable impact on the flavour of the beer, which affects product quality. Process automation has numerous benefits, especially in terms of repeatability and accuracy. Modern

process control valves can deliver this as well as achieving a long service life in a hygienic environment that is exposed to regular washdowns and humidity.

Aside from a clean and polished aesthetic, process valves can offer highly visible cues using multi-coloured LEDs to indicate proper operation or process faults, enabling any issues to be resolved quickly with minimal interruptions to production. This status indication is supported by more advanced, fieldbus technology, which enables process components to be integrated, commissioned and operated more easily.

For smaller installations, modern communication technologies offer a greater freedom to experiment with new recipes while retaining the consistency and repeatability associated with the brand. Furthermore, the ability to monitor operations remotely with notifications of alarms and out-of-tolerance conditions, enable operators to focus on core tasks and even spend time away from the brewery.

Precision data collection

Beyond control valves, sensors also play a vital role in establishing the data points required for a consistent production facility and while many have remained unchanged for years, new technologies can improve process performance. Flowmeters are just one example. The challenges of accurately measuring the flow of fluids containing entrained gases have more recently been overcome using surface acoustic wave (SAW) technology.

Bürkert's solutions for the brewery sector include the Element series of pneumatic control valves, which are well-suited to many applications, from small scale craft processes to much larger industrial-scale enterprises. The FLOWave offers excellent accuracy, even with challenging fluids, while retaining the flow and hygienic characteristics of normal process pipework.

Recent advances in fluid process control are transforming the food and beverage industry, driving improvements in precision, automation, safety, quality, and sustainability. These innovations not only enhance the efficiency and reliability of production processes but also support the industry's commitment to producing safe, high-quality products while minimising environmental impact. As technology continues to evolve, fluid process control will remain a key area of focus, shaping the future of food and beverage manufacturing.

Image captions:



Image 1: Modern breweries employ advanced process control systems to manage every stage of beer production



Image 2: Modern process control valves can deliver numerous benefits in terms of repeatability and accuracy



Image 3: Bürkert's FLOWave offers excellent accuracy, even with challenging fluids

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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 by breweries and laboratories as well as in medical engineering and space technology. The company employs over 2,200 people and has a comprehensive network of branches in 35 countries world-wide.

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