

## Simple steps to successfully size control valves

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**Specifying a replacement control valve can be a challenge. Making the right choice ensures optimum system control and accuracy, but sizing requires time, as well as a certain level of expertise. To help resolve these challenges, flow control specialist, Bürkert, has released a new tool that makes sizing and specifying a control valve for nearly all applications a fast and simple process. Kieran Bennett, Industry Manager – Food & Bev at Bürkert, explains how to specify a control valve.**

When a replacement control valve is required, it's often the case that the user isn't aware of the full specification detail or the application's parameters. This can make what should be a simple, like-for-like swap, a complex and onerous task for the plant engineer. Even if involving a third-party supplier, it can extend procurement time and still require the provision of a detailed specification. Otherwise, it can mean assumptions made by the supplier in specification that might not ensure optimum control valve accuracy.

In many cases, the extent of the end-user's knowledge is that they require a particular size of modulating control valve. However, to ensure that it's correctly specified, the valve supplier might ask for details that the engineer probably doesn't have easy access to, such as flow rate or the viscosity of the media. In reality though, for the vast majority of applications it's fast and simple to specify the right control valve, based on three simple criteria, readily available to the end user.

### **Three steps to specification**

The first question is: what does the valve primarily control? The answer is a choice between flow, temperature, or pressure. Secondly, what media is the valve controlling and what is the application type? This provides general clarification on whether a liquid, steam or gas is involved, and confirms aspects such as whether the media is aggressive. Understanding the application type also confirms aspects such as the specific hygienic requirements of the design, as well as the control type required, for example, modulating or isolation. Thirdly, inlet line size should be confirmed.

To quickly specify a complete package with part numbers, including the right control valve with process controller, sensor, and cables, Bürkert has developed a Valve Sizing Calculator, based on the three selection steps. In action, the Valve Sizing Calculator, provides a specification that ensures control accuracy as well as flexibility.

Selecting for flow control, for example, specifies a valve with an extremely wide range, making it suitable for almost any purpose. In the case of a water application and a 1 inch / 25 mm line, the specified device can operate effectively from a minimum flow of 900 litres per hour (l/h) up to as much as 16,070 l/h. Alternatively, to ensure compatibility of specified valves for temperature control and pressure control applications, the sizing tool provides minimum and maximum ratings for these attributes, as well as the Kv value.

### **Control accuracy**

Sizing components on an individually tailored basis achieves the highest performance. However, for the vast majority of applications, using the Valve Sizing Calculator, will not only prove much faster and easier to specify a replacement control valve, but the performance difference would be negligible compared to tailored calculation.

Taking the case of flow control, 20 years ago, control valve technology demanded that the accurate valve range was between 60 and 80% open. While these values still serve as a guide, valve accuracy has improved to the extent that individual sizing is no longer required in most cases. Bürkert's pneumatic valves are accurate to within 0.5% across nearly the entire range of motion, and if required, electromotive valves are accurate to within 0.1%.

Providing that the pressure drop across the valve is an absolute maximum of 50% of the incoming pressure, and that the temperature and pressure do not exceed or fall below the given values, the control valves specified by the Simple Sizing Tool will fit the requirements. Ultimately, this approach covers nearly all applications, except for those with extreme limits and fluctuations, such as steam control in a power station, where a tailored specification would be needed.

### **Complete control valve specification**

For ease of procurement across the system, the Valve Sizing Calculator also specifies control technology type, ranging from angle seat valves for standard liquid flow control, to globe control for pressure modulation. Valve seal design materials are also specified, such as EPDM for aggressive liquids. For hygienic applications, PTFE seals are provided, as well as crevice-free valve clamp ends instead of threaded variants.

Control valve specification doesn't have to be challenging. Using the basic steps provided by the Valve Sizing Calculator, it's fast and simple to confidently specify a control valve that ensures not only the right fit and performance but includes all the components required for a fast and straightforward replacement.

Try the Valve Sizing Calculator here: [www.burkert.co.uk/en/more-about/Valve-configuration-and-valve-sizing-of-process-valvesding brewing](http://www.burkert.co.uk/en/more-about/Valve-configuration-and-valve-sizing-of-process-valvesding%20brewing).

**Image captions:**

**Image 1:** Bürkert has released a new tool that makes sizing and specifying a control valve for nearly all applications a fast and simple process.



**Image 2:** The tool can be used for a variety of applications, including brewing.

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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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