

Bürkert launches ultra high-pressure valves for hydrogen applications

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Liquid and gas flow control specialist Bürkert has launched a range of valves designed to control ultra high-pressure flow for hydrogen infrastructure applications. The range includes solenoid valves and process valves that can control hydrogen up to 1,000 bar, suitable for grid infrastructure and vehicle fuelling stations. The valves are designed for a long service life and meet all the required safety conformance for hydrogen infrastructure.

The valves are designed for high-pressure hydrogen applications including compression, storage, and transport. The range comes into its own downstream of Hydrogen Production via electrolysis when the gas needs to be compressed to either store it or transport it. Bürkert's new range is also capable of managing hydrogen supply for vehicle fuelling stations.

Solenoid valves

The solenoid valve range for on/off control consists of a direct acting valve and two servo-assisted valves. The Type 6080 direct acting valve can open or close without any assistance from the media passing through the valve and can operate from 0 Barg. It can manage pressures up to 900 bar, and is available with orifice diameters including 0.5 mm and 0.7 mm.

The Type 6480 and 6481 servo-assisted valves rely on a pressure differential across the valve to help it open and close. The type 6480 requires a 5-bar pressure

differential while the 6481 needs a 1 bar pressure differential. The Type 6480 servo piston valve can control hydrogen flow up to 1,000 bar and is available with an 8 mm orifice. The Type 6481 is suitable for hydrogen pressures up to 450 bar and is available in orifice diameters between 12 mm and 50 mm.

The valves can achieve higher switching cycles and extended maintenance intervals thanks to special coatings applied to the wetted components that extend the service life.

Bürkert's new range for ultra high-pressure hydrogen applications also includes the Type 2111 and Type 2121 process valves for on/off control, which are pneumatically operated. The Type 2121 is available with 12 mm to 50 mm orifice diameters and can manage hydrogen up to 600 bar. The Type 2111 features 4 mm and 8 mm orifice diameters and is able to handle hydrogen up to 1,000 bar.

Process valves

The process valves achieve high tightness for dynamic sealing thanks to a dynamic sealing ring on the spindle. The valves are also designed for reliable and long-life use, featuring a robust one-piece design that minimises wear. In addition, they are highly resistant to hydrogen embrittlement, thanks to stainless steel construction, and feature additional finishing on pressure-bearing, moving parts.

All the valves in Bürkert's new range for ultra high-pressure hydrogen applications pass conformance to ensure safety. The valves are designed to withstand twice the stated hydrogen pressure and all valves in series production are tested to one-and-a-half times the working pressure. To prevent leakage, all valves are tested in series production to 5×10^{-5} mbar l/s. Meanwhile, resilient materials including 316Ti stainless steel reinforced with titanium, prevent hydrogen embrittlement.

Stringent design and testing mean the valves achieve ISO 19880-3 for gaseous hydrogen – fuelling stations. This covers the requirements and test methods for the safety performance of high-pressure gas valves used in hydrogen stations up to the H70 designation. The valves also meet Pressure Equipment Directive 2014/68/EU, and for use in hazardous areas, they achieve ATEX Zone 1 IECEx Cat. II.

For more information, visit Bürkert's [website](#).

Image captions:



Image 1: The Type 6480 servo piston valve can control hydrogen flow up to 1,000 bar.



Image 2: Bürkert's range of specialist valves are designed for hydrogen infrastructure applications.

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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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