

Correct positioning of all valves

Switchgear and sensors

Electromechanically or with sensors, by remote control or using cables, in subzero temperatures, in gas Ex zones or in sterile areas – valve positions can be monitored in many different ways and in many different environments.

The querying or monitoring of valves, flaps and other fittings is standard procedure in many areas of process engineering. This is true of automated plants, as well as for manually operated valves, such as those found in pump stations. The ambient conditions are often harsh, for example corrosive (in the chemicals and wastewater industries), extremely hot or cold (in power plants) or explosive (in the oil and gas industry). Other applications take place in sterile conditions and must be able to withstand high-pressure cleaning with steam.



When valves are integrated in automated plants, their positions must be monitored – here using non-contact sensors.

Position switches for Extreme situations

The steute business unit Extreme has long been providing a wide range of electromechanical switchgear and non-

contact sensors for this extensive application field. But it has also recently developed some brand new products – for example the Ex 99 series of position switches with standard dimensions to DIN EN 50041. They are tested and approved in accordance with ATEX and IECEx for gas Ex zones 1 and 2, as well as dust Ex zones 21 and 22. In addition, they are suitable for use in subzero temperatures down to -60°C , as is often the case in oil and gas exploration. In such conditions the choice of materials and the construction of a reinforced plastic, impact-resistant housing are crucial.

Concerning the more compact range of standard switches (DIN EN 50047) for Extreme applications, there has also been a new development: the Ex 97 series. This series features high durability in adverse conditions – corrosion, subzero temperatures (down to -60°C) and strong mechanical wear and tear – and it can also, like the Ex 99 series, be used in explosive zones.

The sealing materials used in both series have been approved by their manufacturers for temperatures down to -95°C , and the lubricants down to -75°C . This provides an ample buffer to the approved switch series temperature of -60°C , leaving users secure in the knowledge that the new position

switches will work reliably, even in truly Extreme conditions.

Ex magnetic sensor for icy conditions

When temperatures are subzero, frozen moisture can pose problems for mechanical parts, so that many valve manufacturers prefer to place their trust in non-contact sensors. For this requirement steute has also developed some new products: its Ex RC M20 KST series of Ex magnetic sensors. These cylindrical sensors with a diameter of M 20 are cold-resistant down to -60°C and can be used in gas Ex zones 1 and 2.

Their non-contact active principle makes the sealing of housings for such ambient conditions simpler and guarantees a long lifespan. The housing material – a high-quality, fibreglass-reinforced duroplast – guarantees that the high protection class of the magnetic sensors (IP 66 to IP 69) remains intact in subzero temperatures even after a 7-Joule impact test.



Impact and shock-resistant, perfectly sealed and suitable for temperatures down to -60°C : the Ex 99 range of Ex position switches.

For valve position monitoring, magnetic switches are also recommended because a special actuator is not required on the inside of the valve, i.e. on the spindle. A

conventional permanent magnet can be used.

Wireless switchgear for water and wastewater

At the IFAT, steute will be presenting its Extreme range (Hall C1, Booth 127), with a focus on switches and sensors for the position monitoring of valves in water and wastewater networks. Here the use of RF IS inductive wireless sensors has an additional advantage: the sensors are installed on the valves inside the shaft, but the wireless universal transmitter can be installed above ground and transmit the sensor signals to the receiver unit from there. This "detached" design facilitates the use of wireless switches and sensors in shafts or other concealed structures preventing direct integration in remote control systems.

Improved energy management

In rough ambient conditions, eliminating cables and other connecting elements which are subject to wear and tear and replacing them with wireless systems can increase the availability of the switching devices. Extreme environments also include explosive atmospheres. In this sensitive application area, it is a great advantage when switching devices can transmit wireless signals from the Ex zone. For this reason, the steute sWave wireless technology has been upgraded and certified as Wireless Ex for use in explosive zones and here can be used, amongst other things, to monitor the position of valves.

The Wireless Ex range includes the steute Ex RF 96 wireless position switches in a slim rectangular design, as well as the Ex RF IS wireless inductive sensors in a

cylindrical design. They are suitable for radio transmission in combination with the Ex RF ST universal transmitter, and are suitable and certified for use in gas Ex zones 1 and 2, as well as dust Ex zones 21 and 22

Both the wireless sensors and the wireless module are very robust. The distance between the transmitter module and the receiver can measure up to 30 m indoors and up to 300 m outdoors. Power is supplied to the transmitter module by a longlife battery.

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