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Where there is one extreme condition, the next is not far away

Ex position switches and Ex magnetic sensors down to -60°C

Subzero temperatures, humidity, explosive atmospheres: in process engineering the conditions for switchgear applications can often rightly be described as extreme. The steute Extreme business unit has developed special ranges for just such conditions. They include standard position switches and magnetic sensors for explosive environments in temperatures down to -60°C.

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

In conventional industrial production, the ambient conditions are usually ideal for switchgear and indeed all electromechanical components: temperatures are pleasant, it is dry, and the machines in which they are integrated are positioned where there

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is next to no impact from external influences. Of course, there are some exceptions. In process engineering, however, applications can be exposed simultaneously to many different adverse conditions, such as humidity, subzero temperatures, explosive atmospheres and high mechanical wear and tear – for example on offshore oil & gas rigs, or on the ships used to supply these rigs. There is a risk of explosion, the switches are exposed to high mechanical wear and tear, the environment is corrosive, and it can get very cold indeed.

Standard Ex position switches for subzero temperatures

For this application profile, the steute business unit Extreme has developed the Ex 97 series of position switches with standard dimensions according to DIN EN 50047. They are ATEX and IECEx approved for use in gas Ex zones 1 and 2, as well as dust Ex zones 21 and 22. These switching devices can be used in temperatures down to - 60°C, which is particularly demanding on the housing construction and sealings. The switchgear protection class IP66 must be maintained at these temperatures, for example, even after a 7-Joule impact test. For this reason, the housing has been manufactured from high-quality fibreglass-reinforced plastic. The sealing of the housing cover is vulcanised over the whole surface. The sealing of the plunger draws on a redundant sealing system. The sealing materials are approved down to -95°C, the lubricants down to -75°C. There is thus a sufficient safety net until the approved temperature of -60°C.

An alternative to electromechanical switches in extreme applications: the Ex RC M 20 KST Ex magnetic sensors

With the Ex 99 series, larger standard Ex position switches in accordance with DIN EN 50041 are also available. They have been approved for use in gas Ex zones 1 and 2, as well as dust Ex zones 21 and 22, and can also be used in temperatures down to - 60°C. These switching devices also maintain their IP66 protection class after impact tests in these subzero temperatures. The redundant sealing system is designed similarly to that of series Ex 97, and thanks to the protective insulation of the plastic design earthing and equipotential bonding are no longer necessary. For both series various actuators are available, e.g. plungers, roller plungers, roller levers, parallel levers, rocker levers, adjustable rocker levers and spring rods. Users can choose between switching insert variants with slow or snap action. Inserts for safety-related applications – as norm-compatible position switches with safety function – are also available.

Ex magnetic sensor down to -60°C

Since frozen damp does not impact their functionality, non-contact sensors are often the product of choice for users working in subzero temperatures. The Ex RC M20 KST Ex magnetic sensors have been

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developed with precisely this profile in mind. The cylindrical sensors with M20 diameter are cold-resistant down to -60°C and can be used in gas Ex zones 1 and 2. The non-contact active principle simplifies the sealing of the housings under extreme ambient conditions. The mechanical life is over one million switching cycles, and the electrical life has been calculated at 10^6 to 10^9 switching cycles. The housing material – a high-quality fibreglass-reinforced Duroplast – guarantees that the IP69 protection class of these magnetic sensors is maintained at these temperatures even after a 7-Joule impact test. These magnetic sensors are suited to the position monitoring of flaps, valves, covers and other mobile components, e.g. in oil & gas equipment, as well as on ships or in ports. Other application fields include handling systems on oil rigs or position monitoring on crane booms.

Extreme environments can also be wireless

When wireless switching devices are used in extreme environments, including Ex zones, the elimination of failure-prone cables and connectors increases switchgear availability. In these sensitive areas an

The Wireless Ex range includes inductive sensors with a universal transmitter which also supplies the voltage

added advantage is that the switching devices can send their signals to outside the Ex zone. This is why sWave wireless technology has also been certified as Wireless Ex for use in Ex zones. The range is continually being expanded and includes e.g. Ex RF 96 wireless position switches in a rectangular design, as well as 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 also powered via the transmitter unit. Both series are suitable and certified for use in gas Ex zones 1 and 2, as well as dust Ex zones 21 and 22.

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