

Highest levels of safety even in niche applications

Safety switchgear for extreme environments

Explosion protection, functional safety and adverse environments such as damp, cold or corrosive elements: some applications require truly specialist switchgear – such as those to be found in the steute Extreme range.

In offshore plants such as oil rigs, explosion protection requirements need to be taken into account. All electrical equipment is exposed to the damp, and in many maritime oil fields the temperatures are sub-zero. Some areas and/or machines are protected by fences for health and safety reasons and require safety switchgear for monitored access.

Admittedly: in terms of the overall market for safety switchgear (let alone the overall market for industrial switchgear), this is a truly niche application. And Ex-protection in combination with the cold or damp could even be considered a "niche within a niche" application. And yet there is a demand for such safety-related switchgear with its highly complex development and production. The steute "Extreme" range includes some new products for such applications.

New series: position switches for extreme conditions

One of these new products is the Ex 99 series of position switches, which has been developed especially for extreme applications and safety-related use. The dimen-



Developed especially for subzero temperatures and Ex-zones: the new range of Extreme switchgear and sensors

sions comply with DIN EN 50041.

The switches have also been tested and approved to ATEX and IECEx for use in gas-Ex zones 1 and 2, as well as dust-Ex zones 21 and 22. In addition, they are suitable for



For safety-related applications in Ex-zones and subzero temperatures: the Ex 99 series

use in temperatures down to -60°C , making especially high demands on housing construction and sealings.

High demands on housing construction and sealings

For this reason, the housings for these new position switches are manufactured from high-quality fibreglass-reinforced plastic. This material guarantees that the high protection class of the switchgear (IP 66) is maintained even after a 7-Joule impact test at -60°C .

A further aspect to which the designers have dedicated considerable attention is the sealing of the plunger. The sealing system is redundant, combining an external sealing cuff suitable for subzero temperatures and an internal Teflon sealing ring.

As is customary for steute position switches, a wide range of actuators is available – including plungers, roller plungers, roller levers, parallel levers, rocking levers, adjustable rocking levers and spring

rods. Regarding the switching inserts, users can choose between different variants, even for functional safety applications.

Standard dimensions mean that the new Extreme switches are easy to integrate in their surroundings.

Safety in subzero temperatures

The - also new - Ex 97 series boasts a very similar set of features. Its dimensions comply with DIN EN 50047, and these switches are suitable for use in gas-Ex and dust-Ex zones (1 and 2, as well as 21 and 22), as well as in temperatures down to -60°C .

The sealing materials used are guaranteed by their own manufacturers down to -95°C , while the lubricants used are guaranteed down to -75°C . This provides a sufficient "safety net" to the approved switchgear temperature of -60°C , meaning that users can be certain that the new position switches will work reliably, even in truly extreme conditions. This is equally true, of course, when the switches are used for



The second new series of safety-related Ex position switches for subzero temperatures: the Ex 97 series

functional safety applications such as the position monitoring of guard doors and flaps in extreme environments.

Tried-and-tested electromechanics within a robust design

One of the principles at steute is always – if at all possible – to offer alternative solutions. For the "classic" safety switchgear application in Ex environments – the position monitoring of guard doors – there is therefore, in addition to the new Ex 97 and Ex 99 series, also a "classic" switch: the Ex AZ 16 safety switch with separate actuator, now available in new variants.

This latter series might not cover such a wide temperature range, but it is equally suited to Extreme applications. In order to comply with explosion protection requirements, the line connector has a separate terminal compartment in "Ex e" type of protection; if desired, the Ex AZ 16 can also be supplied with a pre-wired cable. Customers can choose between versions with two or three contacts; new to the range is a switching insert variant with two NCCs and

one NOC. Available versions also include moveable actuators suitable for guard doors with narrow opening angles.

Non-contact and safe switching in extreme environments

As an alternative to the electromechanical switching devices described above, steute has developed an Ex RC SI M 30 series of Ex safety sensors in a cylindrical metal housing. Due to their non-contact principle, they can be used in areas beyond the limitations of electromechanical devices. They are optimally sealed and are very durable, even in extremely dusty environments. One of the new products in the Extreme range is a sensor with a plastic housing which has been developed for use in subzero temperatures down to -60°C .

Thus even in this very special (niche) area, customers still have a fundamental choice between electromechanical switchgear or sensors.

Extreme safety "live"

A new steute video shows how emergency pull wire switches are used in a tunnel drilling system and also provides an insight into the steute laboratory, where safety switchgear is tested for extreme environments. Live demonstrations include a 7-Joule impact test at subzero temperatures, as well as a sealing test with a high-pressure cleaner. The video is available to watch in English on the steute YouTube channel (<https://www.youtube.com/watch?v=7feC4fsRpg0>) or the steute website (www.steute.com) under "videos".

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