APPLICATION NOTE

Chemicals

Safety rules observed using alarm switches

- Mechanical, autonomous flow switches – no energy consumption
- Ex approved for hazardous areas
- High reliability

1. Background

Chemical plants use substances which can affect people's health if the appropriate precautions are not taken. Every site has strict safety rules and regulations for the protection of its staff. Skin and eyes are often the most exposed. Emergency showers, for rinsing the face and other parts of the body, are installed near areas where incidents are likely to happen.

2. Measurement requirements

Fortunately, these showers are rarely used, as considerable effort is put into the prevention of accidents. However, each time somebody uses these facilities, the event must be reported to a control room for immediate intervention by medical services. An alarm switch, located at each emergency shower, is used to transmit a signal. The switch should consume energy only when the shower button is activated. And it should be approved for Ex applications as most plants are located in hazardous areas.

Decontamination shower

KROHNE

3. KROHNE solution

For this application, KROHNE delivered an explosion-proof DW 18 Mechanical Flow Controller. It is installed on an emergency shower of a chemical plant in Italy. Once the shower handle is pulled down to open the shower valve, water passes through the measuring tube of the DW 18 device. The water pushes a measuring disc mounted on a pivoting rigid arm, which has a magnet fixed to its other end. The change in the magnetic field operates a reed switch, which opens or closes an electrical circuit and, as a result, sends an alarm signal to a control room. The DW 18 does not use any energy at all.

DW 182 EEx d installed on a shower

4. Customer benefits

DW 182 EEx d

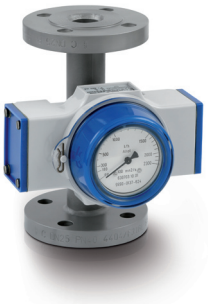
The DW 18 switches are a very economical solution for the chemical plant. Due to their mechanical measuring principle they need no energy to operate, whereas competitor devices require a permanent power supply for their electronics. Furthermore, electronics that are used in a continious mode can get damaged and the alarm may not work when needed. DW 18 devices function without electronics. This ensures that the device can be operated at any time making it highly reliable and maintenance free. The measuring tube can be extended to fit any existing installation. The DW 18 series are EEx d and EEx ia approved which perfectly matches the requirements of the chemical industry.

5. Product used

DW 18 series

- Mechanical, autonomous flow switches – no power supply needed
- EEx d (explosion-proof) and EEx ia (intrinsically-safe) approved (ATEX)
- High reliability and repeatability
- Maintenance free
- Switch position adjustable under process conditions
- Proven technology – for more than 30 years

DW 18 EEx d



DW 18 Standard or EEx ia

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