

How to select the correct Flow Sensor



Overview

A flow switch is a device that is used to monitor the flow of a liquid, air or other gaseous media. A flow switch can send a signal to a circuit, device or system indicating that a predetermined flow condition has occurred. Flow switches are available in many different types and configurations, each suited to different applications. For example, a flow switch may be used as an alarm, as an indicator, to control a pump, or to provide a signal to another device.



Uses

For applications requiring a repeatable signal indicating that the chosen media has reached a pre-determined flow condition, the flow switch is often an excellent solution. Take for example a pump being used to transfer water. If the water supply to the pump fails or falls below a certain flow rate, the pump may continue to run and will potentially overheat and fail. A flow switch can be used to signal the pump to stop working if sufficient water is not present. This is a very simple example and it should be noted that flow switches can be specified to provide significantly more complex flow control options. However, if the sensor is required to do more than simply initiate an action at a specific flow rate, then a flow switch may no longer be the best solution.

Function

Cynergy3 flow switch units employ a number of different principles for their operation. In-line units incorporate a float exposed to the fluid flow. When the pre-set flow condition is attained, the float will move into a position that will trigger a magnetic switch. Paddle flow switch units substitute a paddle for the float but work on the same magnetic switch idea.

Considerations

When considering what type of flow switch to employ, it is vital to understand the application into which the switch is to be introduced. Important factors are:

- The fluid flow rate that will require a signal from the flow switch. ('Must operate' and 'must release' flow rates).
- Electrical load to be switched: Voltage, Current, Power, resistive, capacitive or inductive.
- Electrical earth continuity requirement (IEE regulations).
- The fluid type (to ensure chemical compatibility with the switch wetted parts).
- Working temperature and pressure.
- Flow direction.
- Position in the flow circuit, e.g. before or after a pump. Straight pipe length before or after switch.
- Mounting type: In-line or externally mounted, horizontal or vertical, pipe thread.
- Delay required.
- Space envelope available.
- Connection and Cable: Junction box, Flying lead, cable length and type.
- Approvals required: WRAS, UL, NSF, etc.
- Likelihood of deposit build up. Probability of (and size of) solid particles in the fluid flow.

Types

In-line flow switches are designed to be incorporated into pipework, forming part of that pipework. Externally mounted flow switches are designed to be fitted onto pipework, mounted through a boss, socket or upstand process connection. In-line switches are hence sometimes more difficult to replace as they require pipework to be broken down. Some flow switches are fitted with on-board electronics allowing them to control equipment such as a pump directly through the use of an inbuilt relay.

