UPSTREAM PROTECTION OF PRESSURE RELIEF VALVES - VALVEGUARD

Pressure relief valves (PRVs) are a good solution for protecting against overpressure and so they are widely used in almost every industry and for every type of process media, especially because of their reclosing function. Once the overpressure has been relieved to the atmosphere or a safe location the valve recloses, once again sealing the process.

In process industries, overpressure incidents can occur due to regulator failure, runaway reaction, operator error or equipment malfunction. This can result in catastrophic destruction of systems and equipment, or even lead to serious personal injury or loss of life. Therefore overpressure protection is essential to reliable process safety.

The combination of moving parts of the PRV with the often aggressive nature of industrial processes and its media makes PRVs prone to corrosion, wear and tear, product buildup and leakage. A poor pressure relief design resulting in the wrong dimensioning or set pressure of a PRV can result in valve chatter. PRVs need to undergo regular maintenance and testing resulting in high operational cost and prolonged downtime. Leaking PRVs may cause costly product loss and/or exceeding emissions allowances.

Through the installation of a bursting disc upstream of the PRV, known as the Fike ValveGuard concept, the PRV is isolated from the process, sealing it from the media and pressure. This results in reduced operational and maintenance costs and improved safety.

ValveGuard concept - a bursting disc installed upstream of a pressure relief valve

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In cases where the process media is corrosive, the use of a bursting disc may allow the PRV to be made from stainless or carbon steel, rather than other expensive material and thus lowering the initial investment cost. In the same way the application of a hygienic design bursting disc may allow the use of a non-hygienic design pressure relief valve in pharmaceutical and food and beverage applications.

As an additional advantage the use of a Fike bursting disc eliminates the need to remove the pressure relief valve for testing which often is a time consuming and expensive requirement. With the ValveGuard concept PRVs can be tested in-situ. The space between the bursting disc and PRV is pressurized until the relief valve opens at the set pressure. Some Fike bursting discs have a back pressure allowance higher than the nominal bursting pressure and will remain undamaged during the testing procedure providing a constant test pressure.

ValveGuard keeps the safety aspect of a PRV, but also protects it from the regular damage it would take from the fluid. Maintaining or replacing PRVs is a big cost for plant owners, so ValveGuard creates a yearly savings.