DOWNSTREAM PROTECTION OF PRESSURE RELIEF VALVE

In process industries, there are lot of closed systems where vessels and pipework must be sealed. To protect against unforeseen pressure build-up in those systems pressure relief valves (PRVs) are installed.

Overpressure can occur for a number of reasons. The main ones being excessive temperature, exothermic reaction and/or overfilling of the system. PRVs are a good solution for protecting against this overpressure and so they are widely used in almost every industry and for every type of process media.

PRVs themselves can be an expensive investment and costly to maintain. Several issues like leakage and chatter can occur at the upstream side of the valve, but issues can also occur at the downstream side. Often multiple PRVs flow into a common outlet pipe. The discharged media from one PRV could apply a back pressure to other downstream PRVs. This backpressure affects the opening of the other PRVs. To minimize this backpressure issue often bellows are installed to balance the downstream pressure in the PRVs. However, these bellows are expensive, have a limited service life and also have a high maintenance cost. On top of this the bellows have certain restrictions depending on the pressure, temperature and process media range.

Sometimes backpressure can cause ingress of unwanted media to enter the PRV which results in corrosion over time, or it can build up a polymer layer or creates crystalization at the PRV internals. To avoid these backpressure issues a Fike bursting disc can be installed at the downstream side of the PRV – known as Fike’s ValveGuard concept. At the same time it detects the opening of the PRV.

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A Fike bursting disc ensures the PRV remains in pristine condition, having no wear or tear from the process media, meaning a huge saving in cleaning, maintenance and replacement costs. At the same time, there is no need to consider the use of balanced bellows as the backpressure is avoided.

Another advantage of using a bursting disc is that it can be easily replaced after bursting, meaning that downtimes are kept to a minimum. The disc can also have an integrated sensor to indicate a possible break.

Fike’s ValveGuard solution provides the “best of both worlds”, the safety features of the PRV combined with the highest return on investment, saving on downtime and maintenance costs.