

Mechanical Safety Equipment – precise Standards increase Safety Level

*Christian Eberle, TÜV SÜD, Regensburg, Germany; Rainer Semmler, TÜV SÜD,
Frankfurt, Germany;*

Talking about Safety of chemical and process-plants, all equipment and components must meet high demands. Nevertheless, there are no international standards for pressure relieve devices (burst discs and safety relief valves). Designer and operators often have to rely on their experience, when selecting these safety relevant components. TÜV SÜD speaks up for international regulations, offering a reliable basis for risk assessment.

„Black boxes“ in Risk Analysis

This basis does not exist, as quality, product properties and the safety level cannot be tracked down to solid standards for this kind of components. Indeed, manufacturing, use and operation of this equipment is partially standardized or regulated. Additionally, operators can access data from Interessensgemeinschaft Automatisierung der Prozessindustrie e.V. (NAMUR) or Offshore Reliability Database (OREDA). However, these are as well not standardized, thus not easy to compare and often not even sufficient for a solid risk analysis. The effective reliability as well as guaranteed product properties cannot be extracted from these data. An impartial evaluation is hardly possible, thus burst discs and safety relief valves often remain the dark horse of the equation.

Make Mechanical Safety Equipment calculable

On the other hand, first terms and concepts have to be clarified and agreed, especially those coming from the regulations for electronic PCS¹ safety devices (DIN EN 61508 und DIN EN 61511). Doing this, it is clear that a SIL-evaluation or SIL-equivalent for mechanical safety equipment will not work. On the other hand, in a holistic view, systematic errors must be considered for PCS safety devices as well as for mechanical ones to finally evaluate reliability. This presentation shows a possible way to specifications, applicable to PCS safety devices as well as mechanical safety devices.

¹ Process Control Systems