

Safety Instrumented System to IEC61511

Industry: Life Sciences

Location: Derbyshire, UK

Challenges:

- Independent manual tripping of SIS in compliance with IEC 61511

Solutions:

- PILZ Safety Relay
- Festo Safety Dump Valves



Background

The client provides comprehensive sterilization solutions meeting industrial sterilization needs in the medical device, pharmaceutical, advanced applications, commercial, and food industries.

For this project, they have several chambers in which medical products are placed and then sterilised using Ethylene Oxide (EO). EO is both flammable and highly reactive, so safe operation requires a Safety Instrument System (SIS) to ensure isolation of the gas to prevent release into the atmosphere. Our Actemium Automation Nottingham team was tasked to design, build test and commission a SIS.



Challenges

The site is a lower-tier Control of Major Accident Hazards (COMAH) site, and the Health, Safety and Environment (HSE) regulation references IEC 61511 as the base standard when assessing process safety systems compliance. IEC 61511 includes a requirement to provide independent manual tripping of the SIS, and this was missing from the existing SIS arrangement.

Solution

Actemium Automation Nottingham designed an independent SIS using a PILZ-relay activated by Emergency Stop-type push-buttons. These activate a series of dump valves on the air supply to the SIS valves thereby providing an independent, manually operated trip of the final elements.

The existing SIS was a mix of SIL 1 and SIL 2 SIFs, so the independent trip was designed to meet a SIL 2 risk-reduction capability.

Results

As a COMAH site, this solution provides the HSE with evidence of compliance to IEC 61511.