Pressure Relief Health Check

Pressure relief systems on major hazard sites must be capable, throughout their life, of relieving pressure when process variables deviate from planned conditions.

In high hazard process industries, pressure relief systems are commonly relied upon as a vital line of defence against overpressure or under pressure scenarios. The failure of a pressure relief system may have serious consequences to humans, surrounding equipment and structures, or the environment. Such an incident can lead to fires, explosions or toxic substance release to atmosphere. Pressure relief valves and bursting discs are typically sized using industry recognised standards, based on potential relief scenarios identified during the design phase. The sizing and selection of the relief system requires detailed knowledge of the operating conditions and the specific duty that the device is expected to be exposed to.

The subject is highly regulated, which is understandable given the nature of the hazards involved. Pressure Relief systems are often seen as the last line of defence against a major accident hazard and therefore need to work correctly when demand is placed on them.

Years of operation, maintenance, process changes and new regulation can render the relief system not suitable for its current duty. A review is needed to ensure all relief cases have been identified, use the up to date running conditions and all required certification and documentation is available. The proper design documentation of pressure relief systems is an explicit requirement of the process safety standards.

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How can AXIOM help with this service?

Services – AXIOM can help your company identify if the Pressure Relief Systems on your site are still capable of keeping the plant safe.

- We can perform a health check of your system. This will comprise a review of existing relief stream installations available information and documentation for these streams.
- AXIOM will risk rank this list of relief streams to develop a road map for completion of calculations and documentation according to an agreed set of standards.
- We will also review a sample of existing relief stream documentation to be provided by your company and advise areas for improvement.

Approach

- Carry out a review of the asset's identified 'high risk' relief stream calculations, this would typically consider the following:
  - Determine your company's current knowledge of their relief stream calculations to understand any current issues and problems.
  - Site walk - understand plant areas.
  - Review relief stream schedule – to determine the number of protective devices, RV, BDs, vents and drains.
  - Review disposal systems - atmospheric vents, closed drains system etc.
  - Review relief stream history - inherited legacy systems, new systems - identify areas of concern.
  - Understand common unit operations and determine similar systems.
  - Understand coincident relief scenarios.
  - Understand common cause relief scenarios - fire, utility failure etc.
  - Understand the client's requirements for relief stream documentation.
  - Review technical data availability:
    - Physical property data.
    - Relief philosophy.
    - Reaction information if applicable.
    - Equipment data.
    - Operating procedures.
    - As built P+IDs.
    - Batch control philosophy.
    - COMAH, PHA, HAZOP and LOPA information.
    - Isometric and general arrangements.

Capabilities – The Pressure Relief Health check is provided utilising an experienced team of Pressure Relief specialists covering all aspects of Process, Mechanical and Materials Engineering. AXIOM combines technical expertise with operational experience to develop pragmatic and effective solutions.

Benefits of a Pressure Relief Health Check

The benefit to our clients includes:

- Ensuring compliance with Process Safety Standards
- Identifying gaps in relief system sizing and documentation
- Risk Ranking, to enable prioritisation of the following steps.
- Assess existing installation against latest regulations
- Recommend cost-effective preventative, control and mitigation measures to reduce residual risk to as low as reasonably practicable.
- Supports the COMAH safety report to demonstrate that people and the environment are adequately protected.

Contact us

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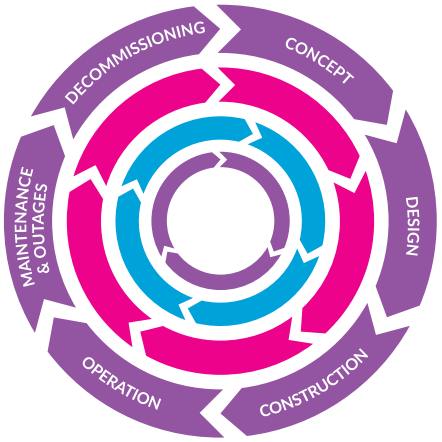

Supporting the Asset Life Cycle