PSE OIL & GAS
PRESSURE RELIEF, FLARE & BLOWDOWN
CENTRE OF EXPERTISE

Fire survivability analysis and blowdown system design

"Full utilisation of the flare system capacity by fast depressurisation should be aimed for in order to prevent unacceptable escalation and to minimise the use of PFP."

SCANDPOWER REPORT
27.207.291/R1

This seminar describes how to apply an analytical methodology to assess vessel survivability under fire attack, and so inform blowdown system design. Updated industry standards, including the 6th edition of API 521, now recognise the need to consider vessel stress during blowdown and, critically, that guidance issued prior to 2014 may not be an appropriate basis for vessel survivability. The session explains why vessels are at risk when exposed to fire, the potential for loss of containment and the possible escalation to a major hazard.

The seminar explains the basis and importance of the new guidance as well as an analytical methodology for blowdown system design. The impact on process design is evaluated through a series of relevant project case studies in offshore platforms and gas processing facilities. These case studies demonstrate how a fully integrated dynamic model optimising transient blowdown loads with available flare capacity improves accuracy, reduces uncertainty, and provides solutions to complex situations where application of Passive Fire Protection is not practical or flare capacity is limiting.

This seminar is one in a series of process safety seminars hosted by PSE's Centre of Expertise in pressure relief, flare and blowdown. As leaders in high accuracy dynamic analysis, PSE seeks to improve understanding of the importance of accurate assessment in Oil & Gas system design.

See psenterprise.com/oil-and-gas for dates and locations.

WHO SHOULD ATTEND

The seminar will be of use to Oil & Gas engineers, especially those with safety / depressurisation experience or remit, dynamic modelling experts and managers with responsibility for asset and plant integrity.

Sample agenda

The free seminar includes lunch and refreshments.

08:30 **Registration**

09:00 **Session 1 - Fire analysis and overpressure protection requirements**

- Basis for provision of pressure relief devices and depressuring systems
- Pool and jet fires
- API 521 6th edition requirements for depressuring
- PSE Oil & Gas and gFLARE

09:30 **Session 2 - Guidelines and workflows**

- Guidelines for API 521 empirical and analytical methods
- The analytical method for fire analysis
  - Vessel wall temperature
  - Stress calculations and rupture prediction
  - Validation: BAM fire test and analysis
- Fire analysis workflows: flare limitations, rupture
  - Aims and key considerations RO sizing, flare limits, rupture, Passive Fire Protection
  - Conventional workflows, tools and limitations
  - Handling of uncertainty

11:00 **Break**

11:20 **Session 3 - Case studies - Enhancements to workflow and calculations**

- Problems in assessing flare capacity limitations, location and maximum vessel stresses and managing data
- Reducing uncertainty in calculations before changing RO sizes or consideration of Passive Fire Protection
  - Case study 1: HP separator fire analysis
- Introducing more efficient and consistent calculations
  - Case study 2: Finger type slug catcher blowdown strategy

12:30 **Lunch**

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