

### Pressure Relief System

This training will provide concentrate on the design of emergency relief devices and systems to minimize accidental releases of hazardous materials caused by equipment overpressure or vacuum. High integrity equipment and piping are the first layer of containment. Depressuring (controlled release) is another level of design to avoid large-scale releases. Pressure relief systems are the last resort; therefore, they should be designed for high reliability even though they will have to function infrequently. The design goal of all layers of containment is to minimize the actuation of relief devices.

**Target Group:** Process engineer / senior process engineer total max 20 (TBA)

---

**Date:** 2.5 days + 0.5 day workshop Course - Check upcoming dates in [www.chemengedu.com](http://www.chemengedu.com)

**Time:** 9:00-17:00

**Price & Promotions:** See rate and promotions in [www.chemengedu.com](http://www.chemengedu.com)

**Venue:** Check venue in [www.chemengedu.com](http://www.chemengedu.com)

**Registration:** By Training Registration Page in [www.chemengedu.com](http://www.chemengedu.com) or contact Khun Piyarat 089 118 6531, [chemengedu.training@gmail.com](mailto:chemengedu.training@gmail.com)

---

#### Scope of Content

- Introduction to safety relief valves-(refer to API 520)
- Methodology diagram for pressure relieving system design
- Scenarios and Load Analysis for Pressure Relief
- Vapor Depressurization
- Overall Relief Load Determination
- Flare System Sizing
- Relief Load Mitigation

#### Agenda & Course Outline:

##### Day 1:

8:00 AM – 9:00 AM      Register

9:00 AM – 12:00 PM

##### **I. Introduction to safety relief valves-(refer to API 520)**

- Important definitions valves
- Pressure in mechanical design
- Types and application of safety relief valves
- Standard overpressure guide\_ Pressure-Level relationship for relieve valves
- Pressure relief valves sizing (prelim)

##### **II. Methodology diagram for pressure relieving system design**

12:00 PM – 13:00 PM Lunch Break

13:00 PM – 17:00 PM

**III. Overpressure Protection Philosophy**

- Hierarchy of Protective Measures
- Double Jeopardy
- Latent Failures
- Operator Error/ Effect of Operator Response

**Day 2:**

8:00 AM – 9:00 AM Register

9:00 AM – 12:00 PM

**IV. Scenarios and Load Analysis for Pressure Relief**

- Fire (liquid boiling, gas expansion)
- Blocked Outlet
- Overfilling
- Thermal expansion
- Check valve leakage or failure,
- Control valve failure
- Vapor blow through
- Cooling water failure
- Power failure
- Instrument air failure
- Reflux failure
- Abnormal heat input
- Loss of feed
- Exchanger tube failure
- Reaction runaway

12:00 PM – 13:00 PM Lunch Break

13:00 PM – 17:00 PM

**V. Vapor Depressurization**

**VI. Overall Relief Load Determination**

**Day 3:**

8:00 AM – 9:00 AM Register

9:00 AM – 12:00 PM

**VII. Flare System Sizing (Overview and Criteria)**

- General criteria
  - Consideration for system segregation
  - Inlet PSV piping
  - Discharge PSV piping
  - Header size determination
  - Flare stack
  - Flare KO drum

- Flare drum pump
- Purging Requirement

12:00 PM – 13:00 PM Lunch Break

13:00 PM – 17:00 PM

**VIII. Workshop and Q&A**

---

**Your Instructor:**

Mr. Artit Wiwatwisansakul,