

# ONE-DAY

## Training Course on Design of Pressure Relief & Flare Systems

Pressure relief and flare systems are common sights in our daily operating domain if you are working in the process industry. Many would have taken these systems for granted that they would be designed to handle all process deviations or upsets when required; but are they the final catch-all solution?

Being a process safety specialist, EHS personnel, process engineer, or technical manager, many of us would have at one point in time asked questions like:

1. How do the pressure relief and flare systems fit into our layer of protection analysis?
2. What are the possible consequences if these systems are poorly designed or maintained? How these consequences affect process hazard analysis? What if the open bonnet vent of a bellow or balanced piston valve is plugged by mistake or insects?
3. What were the considerations when the systems were designed? Can they still handle the plant's current risk levels and contingencies?



*Mr Leslie Tsen from MSD sharing his comments during the training session.*



*Mr Ivan Sin introducing the speakers Mr Chan Keng Yong and Mr Amit Shah from Siemens to the participants.*

On 16 March 2012, twenty-two SLP member-participants gathered at the Singapore Polytechnic Graduates Guild to understand the design considerations of pressure relief and flare system conducted by Siemens Oil & Gas Division.

The 1-day training reviewed the essential process and safety design requirements for pressure relief and flare disposal system. The topics covered include:

- Approach to Pressure Relief System Design;
- Consequences of Improper Design of Pressure Relief & Flare System;
- Overpressure Scenarios & Required Relief Rates;
- Relief Device Sizing;
- Relief Disposal System Design;
- Identification of Global Scenario; and
- Network Equipment Rating for Radiation & Knockout Drum Sizing.

Emphasis was placed on overpressure scenarios identification, required relief load calculation methodologies, relief device capacity calculations, global scenario identification, and flare disposal system design.

During the class, requirements of ASME code and API recommended practices were presented and discussed; along with analysis of common processes to determine relief requirements.

The concepts and best practices of "Ever-greening" was also outlined; enabling company to develop a consistent and standardized pressure relief and flare design philosophy and engineering analysis to promote ever-greening of pressure relief and flare system for the safe operation throughout the entire facility life cycle, coupled with conscientious documentation of the management-of-change process.

This training session provided a good opportunity to exchange knowledge and sharing of experience; enhancing the techniques and methodology in implementing Process Safety Management.

*Written by Ivan Sin*