



Process Safety Engineering - PS-4

COURSE

About the Course

PS-4 is a one week, competency driven, fundamental (more than awareness, less than skilled practice) course covering the broad scope of process safety engineering. Other topics relevant to process safety are introduced, showing how process safety engineering fits into the broader context of risk management and process safety management, but the emphasis is on the technical content. While many of the examples are drawn from upstream and midstream oil and gas facilities, the principles are applicable across the hydrocarbon processing industries.

Topics covered include risk analysis, inherently safer design, process hazards analysis, layers of protection analysis, historical incident databases, leakage and dispersion, combustion behavior, sources of ignition, specific systems and equipment ("bad actors"), layout and spacing, relief and flare, corrosion and materials selection, monitoring and control, safety instrumented systems, and fire and explosion principles. Several of these topics, suitable for one week fundamental courses in themselves, are discussed as they relate to process safety. PS-4 introduces these topics in sufficient depth such that participants will be able to go deeper into any aspect of process safety engineering as and when they need to do so.

The course is designed to accelerate the participants process safety learning curve. Serious process safety incidents occur somewhere in the industry nearly every week, and few if any are new; essentially the same ways of going wrong are found repeatedly, in different operating contexts. One of the main objectives of PS-4 is to develop knowledge of the more common ways of going wrong, and one of the ways of doing that is discussion of major incidents, including some of those that have affected our regulatory environment. PS-4 graduates should be able to see their facilities and projects with a new perspective, a new sense of not only how things work, but also of how things fail. They will also have an appreciation of the reasons for some of our process safety practices and regulations, which will contribute to more consistent and better reasoned application of them.

Jesse Ducommon wrote in the late 1960s that we need to learn from the experiences of others rather than learning the hard way. We are still learning the hard way, and the human, financial, and environmental cost of doing so is both exorbitant and largely unnecessary. PS-4 is a very useful contribution to reducing those costs.

"Instructor was great, very knowledgeable, good at explaining for all experience levels (course had 1 year to 30 years of experienced engineers). Breaks and course structure were excellently timed; information was broken into manageable chunks. Keep up the good work!" - Graduate Facilities Engineer, United States

"This course will help me on inherently safer design on new facilities." - Operations Engineer, Facilities Team,

Canada

"Good facilitation. Good real-world examples. Good breadth of content." - Process Engineer, Australia

Target Audience

Anyone who needs to work with process safety engineers; this would include facilities engineers, operations and maintenance supervisors, project engineers and managers, entry level process safety engineers, experienced professionals new to oil and gas, and anyone who needs a general understanding of the breadth of the process safety engineering discipline. Technical staff from insurance companies and regulatory agencies have found the course useful. Those requiring a less technical course may be interested in PS-2, Fundamentals of Process Safety; and risk-based process safety management is the subject of HS45.

You Will Learn

- Types of equipment and process systems that have historically been problematic in the Upstream and Midstream oil and gas industry
- Basics of risk analysis
- Thinking in terms of Inherently Safer Design
- Most common process hazard analysis methods and where they are used
- Layers of Protection concept - what the different layers are and how they are applied
- Detection and mitigation methods for different types of hazards

Course Content

- Historical incidents and problem areas
- Risk analysis basics
- Process hazards analysis techniques - overview
- Layers of protection
- Inherently safer design
- Hazards associated with process fluids
- Leakage and dispersion of hydrocarbon releases
- Combustion behavior of hydrocarbons
- Sources of ignition
- Hazards associated with specific plant systems
- Plant layout and equipment spacing
- Pressure relief and disposal systems
- Corrosion and materials selection
- Process monitoring and control
- Safety instrumented systems
- Fire protection principles
- Explosion protection

Product Details

Categories: [Midstream](#)

Disciplines: [Process Facilities](#) [Health, Safety, Environment](#)

Levels: [Foundation](#)

Product Type: [Course](#)

Formats Available: [In-Classroom](#)

Instructors: [Peter Williams](#) [William Dokianos](#) [Andy Gibbins](#) [Gerard Hageman](#) [PetroSkills Specialist](#)

In-Classroom Format

19 Aug '24	23 Aug '24	-	Course	In-Classroom (in Perth)	\$6,925.00
21 Oct '24	25 Oct '24	-	Course	In-Classroom (in London)	\$5,630.00
2 Dec '24	6 Dec '24	-	Course	In-Classroom (in Kuala Lumpur)	\$6,315.00