GAS EXPLOSION HAZARDS IN PETROCHEMICAL FACILITIES
ONSHORE AND OFFSHORE
February 28 - March 1, 2019
Eaton Experience Center, Houston, TX

OBJECTIVES

At the end of the course, delegates should achieve the following key learning outcomes:

- Understand the basics and important parameters governing vapor cloud explosions (VCEs)
- Be aware of offshore release and accident statistics and some important offshore accidents
- Understand the accident chain of events and important parameters affecting gas release and dispersion
- Understand various preventive measures to reduce the occurrence of accidents and various mitigation and control techniques to reduce gas explosion consequences
- Learn the various explosion modeling techniques that may be applied and understand the importance of using advance 3D modeling for gas explosion analyses
- Learn the different gas explosion analysis methods and when they may be applied
- Understand how gas explosion loads can be integrated with the responses of structures

CONTENT

- Gas explosion basics
- Explosion accidents: statistics and examples
- Rough Offshore Explosion and Investigation
- Release and Dispersion in Petrochemical Facilities
- Ignition sources
- Preventive Measures
- Mitigation and Control
- Lessons Learned – UK and Norway
- Explosion Modelling
- Explosion Risk Analyses: Objective and Motivation
- Explosion Risk Analyses: Simple Approach
- Explosion Risk Analyses: Advanced Approach
- Explosion Risk Analyses: Selected Analyses Examples
- Gas Detection

A course that covers gas explosion hazards on onshore and offshore facilities. It addresses all aspects of hazards associated with vapor cloud explosions (VCEs): ignition processes, release and dispersion, explosion mechanisms, blast loads and modeling of all these aspects.

WHO SHOULD ATTEND?

- Safety engineers, managers, supervisors, and other personnel involved in the design, operation or modification of offshore oil and gas facilities (platforms, FPSOs, etc) as well as onshore processing facilities
- Accident investigators
- Representatives of governmental or public bodies involved in development of safety regulations
- Anyone who would like to develop an understanding of gas explosion safety

The lecturers include explosion experts Dr. Kees Van Wingerden and Dr. Scott G. Davis

Gexcon www.gexconus.com is an R&D and consulting company specializing in industrial explosion risk. Over 30 years of dedicated experimental research in the field of explosion safety has been carried out in parallel to the development of the commercial CFD-software FLACS for explosion, dispersion and fire calculations. Gexcon offers highly qualified services and explosion consequence and risk software worldwide.
AGENDA
Day 1
08:35 Registration and Coffee
09:00 Opening
  Beyond regulatory compliance, making explosion safety second nature, Current status for explosion safety in petrochemical industry in the US
09:45 Gas Explosion Basics
  Combustion mechanisms, Fuel reactivity, Positive feedback mechanism, Effect of geometrical aspects, Explosion tests
10:45 Coffee Break
11:00 Explosion Accidents: Statistics and Examples
  Overview and analysis of explosion incidents: onshore & offshore
11:30 Rough Offshore Explosion and Investigation
  Video of the 2006 Rough explosion and investigation - Centrica Storage Ltd
12:30 Lunch
13:30 Release and Dispersion in Petrochemical Facilities
  Statistics, Potential leak sources, Process streams, High and low momentum releases, Phase transition, Ventilation, Congestion and confinement, Modeling
14:30 Coffee Break
14:45 Ignition Sources - Fundamentals
  Mechanical ignition sources, Static Electricity, electrical ignition sources
15:30 Preventative Measures
  Ignition Statistics, Hazardous Area Classification, Ventilation, Choice of equipment, Maintenance and procedures, Inventory, ESD
16:00 Panel Session Day 1 - Questions and Answers
16:45 Conclusion

AGENDA
Day 2
08:00 Arrival and Coffee
08:30 Mitigation and Control
  Layout, Use of explosion venting devices, Effect of water deluge, Escalation: loading on equipment and piping, Passive fire protection, Escape routes
09:10 Lessons Learned – UK and Norway
  Gas safety research, Risk assessment criteria, Safety cases - legislation
09:50 Coffee Break
10:05 Explosion Modeling
  Explosion modeling, When simple models do not work: CFD–FLACS
10:50 Explosion Analyses
  Part 1: Objective and Motivation
  Risk tolerance criteria, What to protect
11:15 Part 2: Explosion Risk Analyses – Simple Approach
  Worst case approaches, Case studies
12:00 Lunch
12:45 Part 3: Explosion Risk Analyses – Advanced Approach
  Probabilistic Analysis, What to look for
13:30 Part 4: Selected Examples of Safety Case Analyses
  Layout optimization, Blowout scenarios on drill rigs, Mitigation using water deluge, Screening analyses in concept phase, Gas detection optimization
14:30 Coffee Break
14:45 Panel Session Day 2: Questions and Answers
15:30 Conclusion