

The background of the entire page is a large, intense dust explosion. A massive, bright orange and yellow fireball is expanding, with a thick, dark grey plume of dust and smoke trailing behind it. The explosion appears to be occurring near industrial structures, which are partially visible at the bottom of the frame.

Dust Explosion Hazards Course

Bergen, 24 - 25 June 2020

Join our dust explosion experts for an up-to-date look at how to identify, respond to, control, and eliminate dust explosion hazards in your facility

Dust Explosion Hazards Course

Dust explosions still occur on a regular basis in the process industry causing injuries, fatalities, property damage, business interruption, and environmental pollution. This is in spite of the wealth and knowledge available to prevent the accident and to reduce the consequences to a minimum.

Level

Advanced

Duration

2 Days

Price

USD 1,250



The Godbert-Greenwald Furnace to test the Minimum Ignition Temperature of dust clouds



The 20-litre explosion apparatus



The 25 m³ closed vessel to perform dust explosion tests related to ATEX certification

Introduction

In this two-day advanced course on dust and powder explosion hazards, you will learn all aspects of dust explosion hazards. The emphasis of this course is dust properties, explosion modeling, preventive measures, ignition sources, protective measures, process hazard analysis, legislation, and case studies. It enables the attendees to better understand dust hazards, to be able to recognize potentially serious events, and to implement effective safeguards against the incident.

Course Objectives

The objective of this course is to provide attendees with knowledge on the following topics:

- Dust explosion hazards in the facilities, past accident and international legislation.
- Properties of flammable dust that are important to assess hazards.
- Dust explosion preventive and protection measures.
- How to assess the workplace dust explosion hazards.
- How to evaluate the consequence of dust explosion and the protection needs.
- Participation of demonstration of small scale dust explosion.

Prerequisites

In general, no special prerequisites are required. However, knowledge in process safety and experience in plant operation will be helpful.

Target Group

The course is aimed for people who work in chemical, pharmaceutical, food processing, automotive manufacturing, mining and other industries where dust explosion hazards exist.

- Production supervisors and plant managers.
- Process and safety engineers.
- Chemical engineers.
- Mechanical and maintenance engineers.
- Safety consultants.
- Regulatory body professionals.

Attendees Professional Benefits

Attendees will acquire the following skills.

- Identifying dust explosion hazard.
- Evaluating the existing protection in the facility.
- Applying good practice in explosion accident prevention and protection in the daily work.

Attendees will receive a **competence certificate** by Gexcon at the end of the course.

Organizational Benefits

The enhanced competency on dust explosion of the attending staff will provide organizations with in-house professional knowledge in dust explosion hazard identification and incident prevention.

Agenda

Day 1

09:00	Registration and coffee
09:30	Opening Why is dust a problem? Statistics on dust explosions: equipment involved, ignition sources, dust types.
09:45	Dust Explosion Accidents Examples of accidents: Bremer Rolandmühle (Germany, 1979), Jahn Foundry (US, 1999), West Pharmaceutical (US, 2003), Imperial Sugar (US, 2008), Zhongrong Metal Production Kunshan (China, 2014), Bosley Wood Flour Mills (UK, 2015), etc.
10:15	Dust Explosion Basics and Characteristics Combustion mechanisms, explosion properties and test methods, influence factors.
10:45	Coffee break
11:00	Ignition Sources Mechanical sparks, hot surfaces, static electricity, hot work.
12:00	Lessons Learned: Legislation and Standards International standards and legislation.
12:30	Lunch
13:30	Preventive Measures 1: Introduction Inerting, avoidance of ignition sources, housekeeping, hazardous area classification.
14:30	Coffee break
14:45	Preventive Measures 2: How to Perform Hazardous Area Classification Guidance, important factors to consider, examples.
15:30	Preventive Measures 3: Avoidance of Ignition Sources Demands to electric and mechanical equipment.
16:15	Coffee break
16:30	Preventive Measures 4: Housekeeping Legislation and industry best practice.

Day 2

08:00	Coffee
08:30	Protective Measures 1: Introduction Principles of explosion venting, suppression, isolation and containment.
09:20	Protective Measures 2: Dust Explosion Venting Design How to calculate vent sizes, practical examples of dust handling equipment, vent panels, recoil forces external effects, vent ducts, examples of poor design
10:15	Coffee break
10:30	Protective Measures 3: Dust Explosion Suppression Design Design of explosion suppression. Important factors detection, dust reactivity, vessel parameters, and hardware properties. Examples of dust handling equipment.
11:00	Protective Measures 4: Dust Explosion Isolation Design features regarding the use of slam-shut valves, extinguishing barriers, diverters, rotary valves, explosion flap valves.
11:30	Lunch
12:30	Dust Explosion Process Hazard Analysis How to perform a sound dust explosion hazard analysis. Examples of dust handling equipment, how to comply with legislation and standards.
14:00	Dust Explosion Modelling Using CFD to describe explosion propagation and protection measures for complex dust handling equipment geometry. Examples of design and accident investigation.
15:00	Questions and Answers
15:30	Small-Scale Dust Explosion Demonstration

Lecturer



Dr. Kees van Wingerden

Kees holds a PhD from the University of Bergen, Norway and MSc from Delft University of Netherlands. He has 43 years of experience related to gas and dust explosions. He has also been involved in numerous accident investigations. He is also heavily involved in standardization work and has written numerous articles on explosion safety. At the 16th International Loss Prevention Symposium 2019, Kees received an award for outstanding contribution to the advancement of process safety from the European Process Safety Centre (EPSC).

Course Schedule and Location

Date: 24 - 25 June 2020

Place: Fantoftvegen 38,
Bergen, Norway

We also offer in-house courses where you can specify your needs and preferred time and location.

Registration

You can register to this course by filling out the registration form available on our website: <http://bit.ly/DustExHazardCourse> or you may send an email to Tao.Ho@gexcon.com to receive a registration form. You can also contact us through that email to request an in-house course.

About Gexcon

Gexcon is a world-leading company in the field of safety and risk management and advanced dispersion, explosion and fire modelling. Our experience arises from detailed knowledge of explosion phenomena built up throughout years of conducting extensive research projects, carrying out safety assessments, performing accident investigations, and performing physical testing at the company's facilities.

For more information and product enquiries.

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