

■ **Course title:**

## Explosion risks in Urea Plants

■ **Introduction:**

This training course will discuss the explosion risks in any urea plant. How to read and configure explosion diagrams. In which plant section explosion risks are present and what measures one can take to prevent and mitigate explosions. We will guide you through the process to illustrate where and why explosion risks exist and discuss upset conditions and incidents where explosion risks did occur.

■ **Course outline:**

### Module 1: Explosion diagrams (duration 1.5hrs)

1. How to read an explosion diagram
2. How to configure an explosion diagram
3. Differences of behaviour of combustibles hydrogen, ammonia and methane
4. Practical case of an explosive vent

### Module 2: Explosion diagrams (duration 1 hr)

1. Walking through the plant – in which plant sections one faces explosion risks
2. Differences without and with a hydrogen converter
3. Explosion risks in Stamicarbon and Saipem plants
4. Other causes for introducing explosion risks
5. Explosion Incidents

■ **Learning Outcomes:**

By the end of this course you will understand:

- How to read and configure explosion diagrams.
- In which plant section explosion risks are present
- What measures one can take to prevent and mitigate explosion risks
- In which plant sections where explosion risks exist and why
- Which upset conditions and incidents can create explosion risks

Author / Trainer:

**Mark Brouwer**

Process & Safety Engineer,  
Urea Expert

Mark has over 25 years of licensing, revamping, engineering and consultancy experience in urea projects. He has been visiting more than 100 urea plants located in almost all continents.

Mark has experience in all project phases starting from Concept and Front End Engineering (FEED) through Commissioning and Operation. He is a Master of Chemical Engineering, Post Bachelor in Safety for Engineers, Marketing and Business Strategy Courses at the Rotterdam School of Management and a Member of American Institute of Chemical Engineers (AIChE).

Mark has extensive experience in revamp studies, engineering and process safety consultancy services to EPCM companies and urea plants including the preparation of Revamp and Plant Assessment and Safety Reports, hazard identification and analysis, troubleshooting, risk registers, corrosion inspections, procurement services, training services, etc.

Mark's expertise are Process technology, Corrosion, Licensing, Engineering, Revamping, Marketing, Sales, Contract negotiations, Troubleshooting, Project Management, International business, Safety, high pressure urea valves, high pressure urea equipment.

Mark has provided extensive training programs to more than 1000 urea engineers, managers, (shift)supervisors and operators from all over world.

Mark has published numerous technical papers in reputable industry magazines and presented at numerous CRU Nitrogen & Syngas and AIChE Ammonia Safety Conferences.



■ **Who will benefit:**

Anyone who is involved in the design, engineering, operation and maintenance of any urea plant including marketing, sales, business development of urea production technologies or production equipment including:

- Engineers and Managers
- Operations
- Maintenance
- Marketing and Business Development Managers
- Safety, Health and Environmental Managers

■ **Course materials:**

- Hand Out Presentations in pdf format
- Several background Technical Papers

■ **Price:**

**€ 400**

■ **Discounts:**

- 2 places – 10% discount
- 3 places – 15% discount
- 4 or more places – 20% discount.

■ **In-company training:**

This course is also available as an in-company course (face-to-face or online) where content can be customised to meet your organisation's specific needs and delivered on a date/location that suits your requirements.

[Contact us](#) for more information.

■ **Training code:** UREA06