

# PROCESS SAFETY IN UNIT OPERATIONS

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**14 - 17 March 2022**

LEUVEN | FACULTY CLUB



## DEAR MEMBER,

essenscia would like to present the details of the Specialized Course on Process Safety in Unit Operations organized by Delta Process Academy, essenscia and the essenscia Chair Safety Engineering. For additional information concerning these topics please feel free to contact **Mr. Geert Boogaerts** (+32 476 906 663 | gboogaerts@essenscia.be)

The level and quality of process safety management determines the success of an organization. This course offers the essentials of process safety engineering.

### Programme

Process safety is a specific discipline within the organization of a company. The level and quality of process safety management determines the success of the organization. Delta Process Academy aims, with this 4-day Specialized Course on Process Safety in Unit Operations, to provide professionals with a process safety course offering the essentials of process safety engineering. The lectures are taught by specialists in their discipline. For each day a syllabus is provided by the organization and a certificate will be granted at completion of the course. Additionally for all the participants a text book "Guidelines for Engineering Design for Process Safety" is provided.

### Governance board and steering committee

- ✓ **MSc. Ivan Pelgrims**,  
President essenscia Process Safety Academy,  
General Manager Evonik, Board Member of essenscia
- ✓ **MSc. Frank Beckx**, Managing Director of essenscia Flanders
- ✓ **MSc. Koen Colpaert**,  
Group Process Safety Manager, Borealis
- ✓ **MSc. Dick Oomen**, Plant Manager, ExxonMobil,  
Board Member of essenscia Flanders
- ✓ **MSc. Nico Hertoghe**, ExxonMobil Research & Engineering
- ✓ **Phd. MSc. Pol Hoorelbeke**, Vice president Safety, Total
- ✓ **MSc. Frank Quaeys**,  
Head of Technical Services Covestro
- ✓ **MSc. Marnix Mahieu**, Managing Director, Kronos
- ✓ **MSc. Jan Weckx**, Antwerp Process Safety Lead Bayer Crop science,  
Bayer Agriculture
- ✓ **MSc. Benny Ghoos**, Senior Operations Support Manager,  
Johnson & Johnson
- ✓ **MSc. Geert Vercruyse**, Process Safety expert, BASF

#### HOST CITY

Leuven

#### LOCATION

Faculty Club  
Groot Begijnhof 14  
[www.facultyclub.be](http://www.facultyclub.be)

#### LUNCH

3 courses business menu

#### TOTAL REGISTRATION FEE

€ 2000





### Attendees

Professional engineers with industry experience for whom understanding and applying process safety thinking is an integral part of their jobs and who would benefit from an engineering view on process safety for deepening the expertise in their roles and for their career development (e.g. operations, engineering, maintenance, inspection, safety professionals...).

### Lecturers

- ✓ **MSc. Eric Dom**, Process Safety Consultant, Nero
- ✓ **MSc. Geert Boogaerts**, Senior Advisor Process Safety, essencia
- ✓ **MSc. Nico Hertoghe**, Core Safety Engineering, ExxonMobil
- ✓ **PhD, MSc. Denis Mignon**, Polymers Process Specialist Total, Visiting Professor UCL
- ✓ **MSc. Geert Vercruyse**, Process Safety expert BASF, Visiting Professor KU Leuven and Ghent University

### Aims

Process Safety Engineering plays an important part during the lifecycle of a process plant. Not only are important preventive and mitigating measures defined during the project phase, also during operations changes are introduced; near misses and incidents will occur. This all requires a fundamental knowledge of process safety concepts.

The lectures are built around some generic important process units within the chemical industry: batch and continuous reactors, distillation columns and storage tanks. Both will be presented in a generic way to indicate specific process safety engineering features.

In depth incident analysis with an engineering root cause or as solution are presented during the first day together with the concept and the proofed added value of intrinsic safe design. During the second day a theoretical course on calculating relief valves is taught, followed by a practical workshop.

The third day is built up around the set-up and interpretation of the instrumentational protection devices (IEC 65111). The instrumentational protection guidelines are discussed and interpreted from a theoretical, practical and organisation level supported by evidence based examples, interpretation and applications.

The fourth day is focussing around a key operation for every chemical company, namely storage of chemicals from an engineering point of view. A plant visit to a life installation brings the theory into practice.

*This course is included in Master of Safety Engineering at the KULeuven and has a student's evaluation of 4,8/5.*

[www.essencia.be](http://www.essencia.be)



DAY TO DAY OVERVIEW OF THE PROGRAMME :

**08:30 – 17:30**

DAY 01



**MONDAY 14 MARCH 2022**

## Chemical Reactors



Welcome speech

**Geert Boogaerts**, Senior Advisor Process Safety, essenscia  
Why to start with engineering ?



Introduction to process safety design

**Geert Vercruyse**, Process Safety expert BASF, Visiting Professor KU Leuven and Ghent University  
Lessons learned from incidents – The build-up of a process safety concept



Inherent safe design & case studies

**Nico Hertoghe**, Core Safety Engineering, ExxonMobil  
Incorporation of intrinsic safe elements in design engineering

DAY 02



**TUESDAY 15 MARCH 2022**

## Mechanical safeguarding



Scenario selection and boundary conditions – A distillation column as an example

**Geert Vercruyse**, Process Safety expert BASF, Visiting Professor KU Leuven and Ghent University  
A common and broad unit operation – safety engineering



Detailed design of a relief valve (API 521)

**Denis Mignon**, Polymers Process Specialist Total, Visiting Professor UCL  
Towards a correct calculation. Every scenario included ?



Case studies: workshop calculation of relief valves

**Sadat Homayouni**, Shirin & Gaëlla Delcour, Experts, Sweco  
Can we calculate everything?

DAY 03



**WEDNESDAY 16 MARCH 2022**

## E & I in Process Safety Engineering



From alarm towards controller and/or interlock

**Geert Vercruyse**, Process Safety expert BASF, Visiting Professor KU Leuven and Ghent University  
Including learning from incidents



Detailed design of an instrumentational interlock (IEC65111)

**Erik Dom**, Process Safety Consultant, Nero  
Inspired by the process risks ? An operational point of view



Case studies: workshop calculation of instrumentational interlocks

**Erik Dom**, Process Safety Consultant, Nero  
How to attach theory towards the real life ?

DAY 04



**THURSDAY 17 MARCH 2022**

## Storage tank



Process safety aspects around storage

**Geert Vercruyse**, Process Safety expert BASF, Visiting Professor KU Leuven and Ghent University  
A simple operation ?



Site visit at ITC Rubis Terminal Antwerp

**Pascal De Maeijer**, CEO, ITC Rubis Terminal Antwerp  
A real life visualization

LIMITATION: This Specialized Course is limited to 20 participants.  
A high level of interaction is foreseen.

## SUBSCRIPTION FILE

The essenscia Process Safety Academy and the essenscia Chair Safety Engineering organize a 4-day Advanced Course on Process Safety.

## PARTICIPANT

FIRST NAME

LAST NAME

EMAIL

COMPANY

FUNCTION

Member of Process Safety Academy

Member of essenscia

## THE INVOICE OF €2000 (TOTAL REGISTRATION FEE, EXCL. VAT) CAN BE SENT TO

COMPANY

STREET AND NUMBER

POSTAL CODE AND CITY

V.A.T.

PURCHASE ORDER

SIGNATURE OF THE PARTICIPANT

To be sent by mail

to **Ms. Michèle Celis** (mcelis@essenscia.be)

For additional information please feel free to contact

**Mr. Geert Boogaerts** (+32 476 906 663 | gboogaerts@essenscia.be) or**Ms. Michèle Celis** (mcelis@essenscia.be).

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where chemistry meets life sciences



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