



Course organisation

ENG 431 - Safety of chemical Processes

Type of training

- On site lecture
- Moodle is the main source of information:
- Class/Lecture time:
 - Lecture ($\sim 1/2$ time)
 - Presentations and discussion ($\sim 1/4$ time)
 - Exercises (some during lecture/class time, some to do on your own) ($\sim 1/4$ time)

Themes of the lecture – numbering used in Moodle

1. Introduction
2. Thermal risks assessment
3. Calorimetric methods
4. Decomposition reactions, Heat accumulation conditions
5. Mastering exothermal reactions
6. Risk reducing measures
7. Gas/Vapor and Dust Explosions
8. Case Study on thermal risk assessment

Lecture on Chemical Process Safety - Methodology

- Orientation towards industrial practice
 - Case studies
 - Theoretical bases
 - Transfer to practical aspects
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- If I have assumed you know something and you haven't learnt about it, please let me know!!

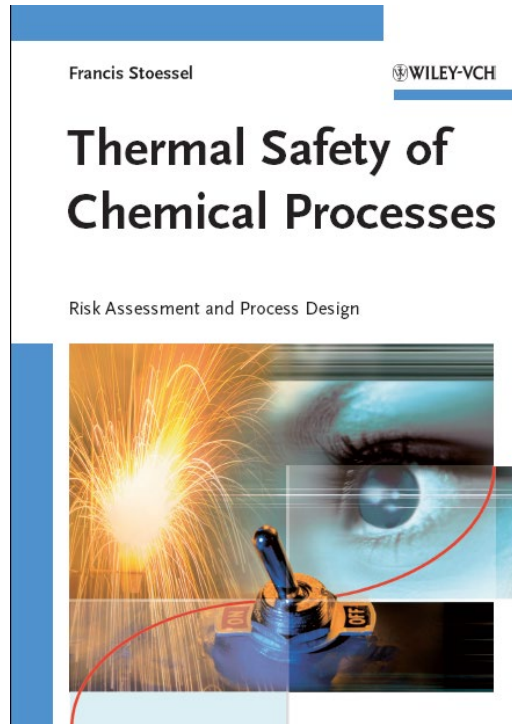
Lectures – Planned program, might change

#	Date	Contents	Slides (Modules)	Exercises
1	13.9	1. Introduction - Process safety 2. Thermal risks assessment	1. Introduction 2. Systematics	Exercises will be loaded on Moodle Solutions will be loaded on Moodle at appropriate times
2	20.9	3. Calorimetric methods 4. Decomposition reactions	3. Calorimetry 4. Thermal Stability	
3	18.10	4. Autocatalysis 4. Heat accumulation conditions	4. Autocatalysis 4. Heat Accum.	
4	1.11	5. Mastering exothermal reactions	5. Reactors	
5	15.11	6. Risk reducing measures	6. Criticality-Measures	
6	29.11	7. Explosion protection	7. Explosions	
7	13.12	8. Case Study	8. Case Study	

- Thermal Safety of Chemical Processes by Francis Stoessel

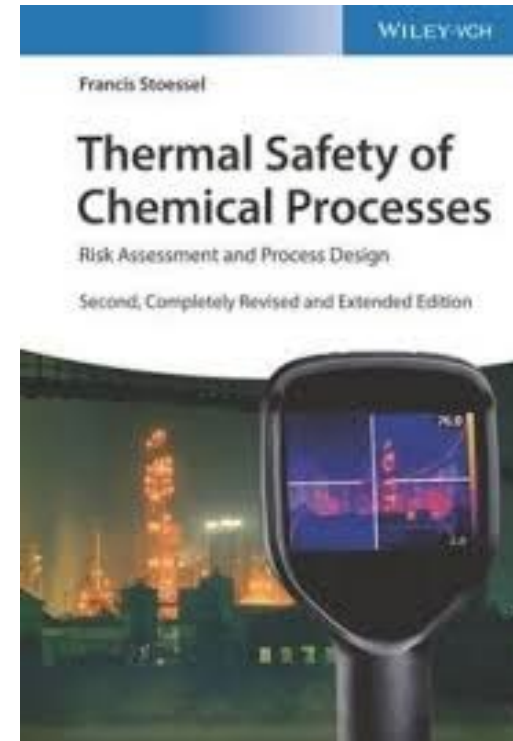
1st edition 2008

Downloadable via EPFL library (search for Thermal Process Safety)



2nd edition 2020

Downloadable via EPFL library (search for Thermal Process Safety)
A lot of solved exercises



Exam

- Written Exam (3 hours) during exam session max. 4.5 points
- Oral group presentation max 0.5 points

- Exam:
 - Multiple choice
 - Questions
 - Exercices/Problems

- ! Not only calculations but also questions about content ensuring that concepts have been understood
- Material: one recto-verso A4 sheet with notes etc

Case Histories Program as of 13.9.2024

Date	Case Study	Student	Student	Student
20.09.2024	13: BP America	Barabino Francesco	Gorgeon Anastassia	Roudaut Arthur
20.09.2024	02: Distillation	Bardin Charlotte	Gruson Thomas	Ryser Jonathan
18.10.2024	18: Texas Tech	Blanc Pauline Marie-Charlotte Louisa	Chen Cheng-Yang	
18.10.2024	03: DMSO	Ceccucci Anna	Jaussi Valentine	
01.11.2024	16: Heat exchanger	Coulibaly Thomas-Emmanuel	Jenni Nicolas	Dumond Léo
01.11.2024	19: Toxic release	De Limburg Stirum Ferdinand	Joannes Jérémy	
15.11.2024	08: Amination	Djukic Marija	Lin Yuqin	Scarpelli Federica
15.11.2024	20: Optima Belle	Saix Louis	Mpirwa Mylène	Tran Emilie
29.11.2024	14: Buncefield	Etique Juliette	Nonnet Mathéo	Vanderkerken Matthias
29.11.2024	09: Ink dust explosion	Gaillard César	Pankiv Marko	Villatte Tom
13.12.2024	17: Metal dust Flash Fires	Ghanem Zahraa	Piccaluga Costanza	Youssef Michel
13.12.2024	10: Static spark	Gonzalez Villaverde Ana	Rafla Moheb	Zergot Fatima

EPSC conference

- EPSC: european process safety center
 - Working groups
 - Guidance documents
 - Common views
 - Tools
- 13, 14th September 2022 in Antwerpen
 - Presentations from industry (3 parallel sessions)
 - Networking opportunities (e.g. Shell, DSM, Neste, Patheon, Umicore, Solvay, Saudi Aramco, Evonik, BASF, Cargill, Dow, Covestro, Johnson&Johnson, TotalEnergies....)
 - Free participation for one EPFL Student (following the class in 2020)
- 13&14th of December 2023 in Maastricht (MECC)
 - Free participation for one student following the class in 2022
- 2nd and 3rd of December 2024 in Barcelona
 - Free participation for two student from class in 2023
- 2025
 - Free participation for students from your class



EPSC - European Process Safety Centre

Industry Working Together on Process Safety