

GASIFICATION

**CO₂ MITIGATION
TECHNOLOGIES**

INTRODUCTION

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GASIFICATION

PRACTICAL PROBLEM SOLVING

- ⦿ 30 hours
- ⦿ 2 parts:
 - Introduction to Mathcad (7-8 weeks)
 - **TEST**
 - Individual problem solving
- ⦿ Final grade:
 $0,4 * (\text{Intro} + \text{test}) + 0,6 * (\text{Problem})$

INTRODUCTION TO MATHCAD

- ◉ Mathcad environment:
 - toolbars,
 - writing text,
 - basic calculations
- ◉ Vectors, matrices
- ◉ Variables, equations, system of equations
- ◉ Calculus and symbolic calculations
- ◉ Differential equations
- ◉ Basic programming

PROBLEM SOLVING

- ◉ Gasification process simulation - syngas composition
- ◉ Kinetics of pyrolysis
- ◉ Flame temperature
- ◉ Gas cleaning
- ◉ Fluidisation

CARBON DIOXIDE MITIGATION

SEMINAR

- ◉ 30 hours
- ◉ 2 presentations
 - Based on a given article (individual)
 - Preparing given topic (in pairs)
- ◉ Final grade = average of the above

TOPICS

1. Pre-combustion methods
2. Post-combustion methods
3. Physical absorption methods
4. Chemical absorption methods
5. Alternative methods for CO₂ removal (membranes, algae etc.)
6. CO₂ transport and storage