Apprenticeships & Theses

SUMMER APPRENTICESHIP: DEVELOPMENT OF A THERMOPHYSICAL PROPERTY LIBRARY FOR CARBON STEEL

KEY WORDS OF ASSIGNMENT:

- Thermophysical properties
- Software development
- CALPHAD

CONTENT OF ASSIGNMENT:

To optimize and control the production of steel, different models exist describing the different production steps. Many of these models make use of the thermophysical properties (density, enthalpy, heat conduction, …) of steel. Currently, these properties are defined as (steel composition dependent in the best case) parameters. The goal of the assignment is to make a software library that returns the thermophysical properties of steel based on the composition, state of matter, and temperature. In the first phase, the different existing algorithms (e.g., CALPHAD) will be evaluated. The most suitable algorithm will then be implemented in a software library.

OBJECTIVES:

- Make overview of existing libraries and algorithms
- Implement the most suitable algorithm in a new software library

EXPECTED COMPETENCES:

- Basic programming skills (OOP)
- Basic thermodynamics

NUMBER OF STUDENTS:

- 1

TARGET GROUP: BACHELOR/MASTER/ … & SPECIALIZATION(S):

- Master of Science in Chemical Engineering, Materials Engineering, Electromechanical Engineering, Engineering Physics or Computer Science Engineering

LOCATION:

- ArcelorMittal Gent (John Kennedylaan 51, 9042 Gent)

PROMOTORS:

- Industrial : Marijn Billiet & Karsten Naert

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