

TITLE: PREDICTIVE MAINTENANCE OF A CONTINUOUS CASTER BASED ON ELECTRICAL ENGINE PERFORMANCE.

KEY WORDS OF ASSIGNMENT:

- ✓ Data analysis
- ✓ Predictive maintenance
- ✓ Continuous casting
- ✓ Machine learning

SUMMER APPRENTICESHIP

MASTER THESIS

CONTENT OF ASSIGNMENT (POSSIBLY ILLUSTRATED WITH PICTURES/DRAWINGS):

ArcelorMittal Gent (formerly known as Sidmar) is a steel plant situated in the port of Ghent. It produces flat steel products, used amongst others in the automotive industry.

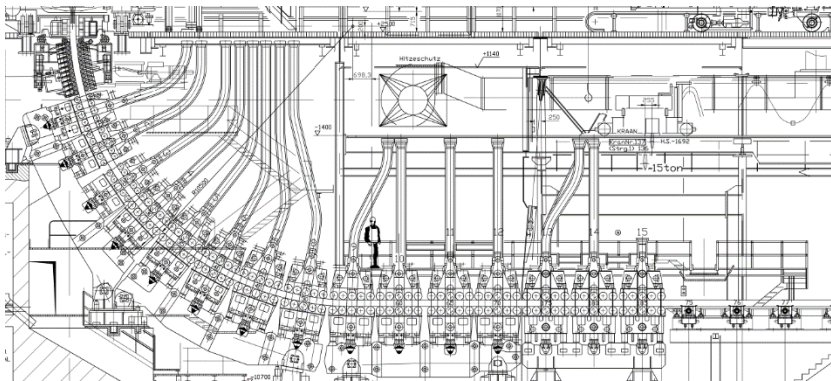


Figure 1: cross-sectional view of a continuous caster. Top left is the casting mould, further down are the rolls supporting the solidifying strand.

Continuous casting is the part of the production process where liquid steel is cast into a continuous strand, which is cut into separate slabs. In other parts of the factory, these slabs are further processed into coils.

In the continuous caster, liquid steel is poured into a mold. The steel partially solidifies and forms a solid skin. During the following solidification process, the solid skin of the strand is supported by rolls (see figure 1).

Some of these rolls are driven by an electric motor.

Deformations and misalignments of the rolls, broken driveshafts and broken bearings lead to a quality deterioration of the final product (see figure 2).

The goal of this thesis is to develop a predictive method which can detect issues before occurrence based on several measurements such as current, speed, temperatures, ...



Figure 2: Indentation marks on a slab of a defective roll.

OBJECTIVES:

- Early detection of issues with the rolls in the continuous caster based on measurements.

EXPECTED COMPETENCES (KEY WORDS):

- ✓ Statistics
- ✓ Basic signal processing (Fourier,...)
- ✓ Python or C#



NUMBER OF STUDENTS:

- 1

TARGET GROUP : BACHELOR/MASTER/ ... & SPECIALISATION(S):

- Master in Computer Science Engineering
- Master of Science in Computer Science
- Master of Science in Electromechanical Engineering
- Master of Electrical Engineering
- Master of Mathematical Engineering

LOCATION:

- ArcelorMittal Gent Systems & Models (John Kennedylaan 51, 9042 Gent) + at home

PROMOTORS:

- Industrial : Matthias Bruers, Marijn Billiet
- Academic :

FIRST CONTACT:

- Sofie De Croock: stages@arcelormittal.com of 09/347.42.16
- To check the availability of this master thesis, please mail to stages@arcelormittal.com