PhD position for smart quality prediction in continuous casting of steel "HYCast"

(m/f/d)

Company description

K1-MET is one of the leading and internationally renowned metallurgical competence centres for ferrous and nonferrous metallurgy in Austria working on research issues such as energy efficiency, circular economy, and climate neutral metal production, as well as digitalization potential of the metal-producing sector. The basis for a fruitful development of K1-MET is the well-established co-operation with our partners from industry and academia. Our main sites are in Linz and Leoben, Austria, in close proximity to the most important locations of the Austrian metal industry. Together, we are working on process solutions to advance the modernization of the European metallurgical industry, driving forward the development and application of advanced future technologies from fundamental research towards industrial implementation.

Description of position and tasks

You will be working on an enhanced study of the steel solidification during continuous casting of steel including the secondary cooling zone. The PhD thesis will be carried out at Montanuniversitaet Leoben (MUL) and supervised by the Chair of Ferrous Metallurgy (ESM). The PhD topic is **"Smart quality prediction for continuous casting by a hybrid approach (HYCast)"**. Your work will cover an interesting portfolio of activities, ranging from the work on lab-scale for determining heat transfer coefficients ("Nozzle Measuring Stand"), the numerical simulation of continuous casting with an in-house developed software ("m²CAST"), the analysis of data from continuous casting machines of two very well-known steel producers, and finally the connection of the results in a hybrid modelling approach to predict the influence of casting parameters and plant data on product quality. The result of your work will be used to explain and predict the occurrence of defects on the finished steel product, thus improving the performance and process control of continuous casting. During your PhD thesis, you will work with experienced colleagues in the field of metallurgy, machine learning, data analytics and process technology. You will become a part of an international and professional team, which includes academic and industrial partners. With your work, you will make an important contribution to enhance process understanding and the achievement of new as well as innovative results in the steel industry.
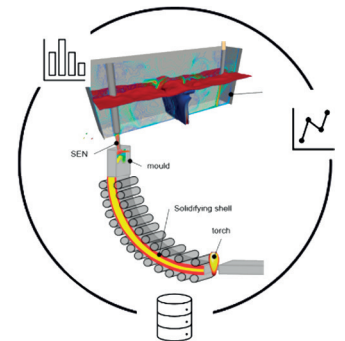
Competences and experiences

We are looking for the following competences and experiences:

- Academic qualification (diploma / master) in technical or natural sciences (metallurgy, mechanical engineering, chemical engineering, physics, informatics / data science or related fields)
- Experience or strong interest in ferrous metallurgy, process technology and programming with Python, experience with machine learning approaches is welcome but not mandatory
- Social competences, accessible personality, ability to solve problems constructively as part of a team
- Decent presentation skills and autonomous time management desired
- Proficiency in English language obligatory, proficiency in German language advantageous

Start of employment:	immediately
Duration of employment:	limited to 4 years
Type of employment:	Full time (38.5 h / week), flexible working hours
Employer:	K1-MET GmbH, www.k1-met.com
Place of work:	Leoben, Austria
Compensation:	The gross salary for this PhD position with a Diploma / Master's degree is € 3,592 (14 × p.a., full time according to the collective labour agreement of mining and iron-producing industries).

Does this position sound interesting to you? Then feel free to send your CV, a motivation letter, and your references to **office@k1-met.com**, using "PhD position – HYCast" as the subject of your email. The position is open starting right away until a suitable candidate is found. International applications are encouraged. As a family-friendly company, K1-MET GmbH guarantees equal opportunities regardless of gender and origin.

Employer
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Contact K1-MET
DI Dr. Johannes Rieger
Management Area Metallurgical
Process Efficiency and Circularity

Contact MUL-ESM
Ao. Univ.-Prof. DI Dr.mont.
Christian Bernhard
http://metallurgy.ac.at