AMAP
Advanced Metals and Processes

Invitation to the 85th AMAP Colloquium

Presentation by

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Kraftblock GmbH

High-Temperature Heat Storage for Decarbonization in the Metals Industry

On Thursday, ***April 11th, 2024 at 4 p.m.***
with subsequent discussion at AMAP

All interested persons are sincerely invited to the AMAP foyer.
Snacks and refreshments will be available.

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High-Temperature Heat Storage for Decarbonization in the Metals Industry

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Abstract

The metals industry, particularly aluminum and steel, is a key driver of the economy. Therefore, the pressure to decarbonize the metals sector, which is one of the biggest challenges and yet most important for the energy transition, is high in Europe. The emissions from the energy used in the production and processing of metals account for a large part of the total emissions, and efficiency in particular has a large market volume in itself alongside carbon certificate savings. At the same time, green power from wind and solar is becoming more and more competitive and advantageous to natural gas.

However, waste heat recovery, which is a great efficiency booster, and renewable energies often do not match the requirements of operating schedules. This problem is solved by a buffer - energy storage. The problem here is: batteries contain critical resources (i.e., materials), are still expensive, and they lack efficiency for heat or power-to-heat applications.

Kraftblock has developed an energy storage system that stores heat directly and is suitable for use in the metals industry at high temperatures. Based on a resource from steel production itself - slag -, it uses a cheap waste product in combination with a proprietary binder to form a new storage material. The presentation will explain the material and its characteristics in more detail.

Furthermore, the presentation will showcase how the aluminum and other metal industries utilize the storage systems regarding waste heat and renewable energy. Applications involve examples like replacing fossil fuels in the Bayer process to smelt secondary aluminum or enabling green casting in the aluminum sector. Additionally, steel and aluminum metal processing will be discussed as well as the refining of copper. This will both be presented based on the analysis and engineering of Kraftblock and respective implementation projects with Tata Steel, PepsiCo and others.