NEWSLETTER

ISSUE 1 | March 2025

Safe H-DRI

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SAFE TRANSPORT OF DRI FROM H2-BASED DIRECT REDUCTION CONSIDERING QUALITY-RELATED H-DRI REACTIVITY, STABILITY, THE EFFICIENCY OF PASSIVATION METHODS AND HEALTH AND RECYCLING ASPECTS

NEWS | VIEWS | ANNOUNCEMENTS

ABOUT Safe H-DRI

MOTIVATION

Complying with the EU Green Deal and the RFCS objectives to support clean steel breakthrough technologies and ensure process sustainability, it is essential to assess and minimize health and safety risks throughout the production chain.

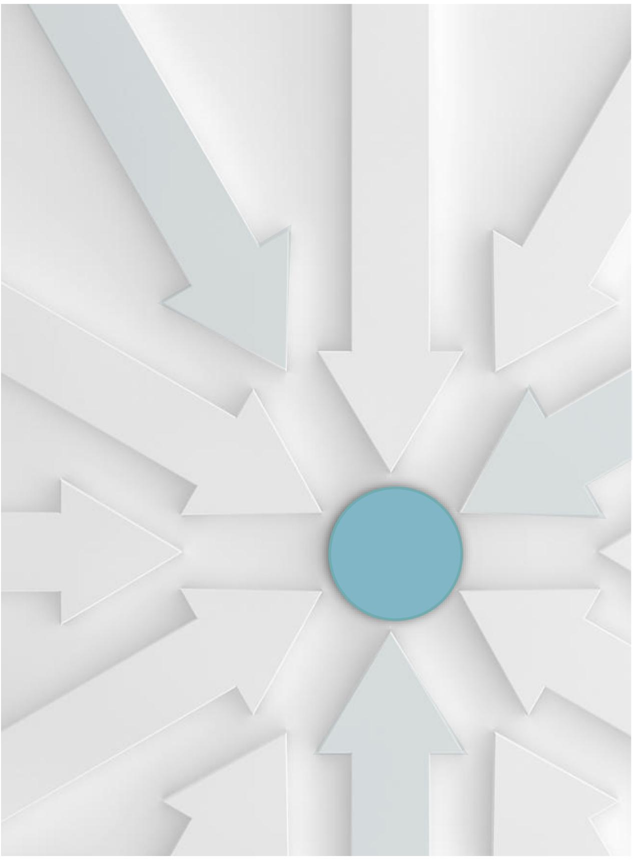
As hydrogen-based direct reduction (H-DRI) is introduced (pure H2 and mixed with NH3), fundamental research is needed to understand the effects on and from DRI-handling and treatment e.g. from different iron ore qualities, including lower-grade ores, under various conditions.

This requires evaluating the reoxidation risks of H-DRI during transport and defining effective passivation methods to prevent hazards such as self-heating, ignition, and explosions.

Additionally, innovative solutions for dust management and fines recycling must be developed to minimize material losses and ensure safe handling.

The Safe H-DRI project aims to design a secure transport system for H-DRI, supporting the steel sector in updating transport standards and leading the transition towards low-carbon steel production.

The project was launched on 1st October 2024 and has a duration of 42 months.



OBJECTIVES

TARGETS & HOW TO MEET THEM

The project addresses the safe handling and transport of hydrogen-based direct reduced iron (H-DRI), focusing on minimizing reoxidation risks and ensuring material stability during storage and logistics.

Safe H-DRI evaluates the behavior of different iron ore qualities reduced with hydrogen or hydrogen-ammonia mixtures, considering the impact on product stability and reactivity.

Passivation strategies are tested to prevent self-heating, ignition, and dust formation, ensuring safe transport and handling.

Additionally, the project investigates the reuse of fines generated during handling to reduce material losses and promote circularity.

Safe H-DRI develops optimized procedures for H-DRI storage, transport, and processing, supporting the establishment of standardized guidelines and ensuring the safe and efficient integration of H-DRI into the steel value chain.

The project is divided into six work packages, which focus on the following subjects:

- Project Management
- Characterization of hydrogen-based direct reduced iron (H-DRI) and its reoxidation behavior
- Investigation of passivation methods and validation through laboratory trials
- Development of safe handling, storage, and transport solutions
- Assessment of fines recycling and circularity strategies
- Dissemination, exploitation and communication

CONSORTIUM

MEET OUR TEAM

The project is coordinated by K1-MET GmbH, a leading research organization specializing in metallurgical process efficiency and circularity, supported by major stakeholders in the European steel industry.

The consortium is composed of 18 partners, bringing together a wide range of expertise to address the safe handling, transport, and recycling of hydrogen-based direct reduced iron (H-DRI) across Europe.

Among these partners are six steel producers (Acciaierie d'Italia, Dillinger, HKM, voestalpine Stahl GmbH, voestalpine Stahl Donawitz GmbH, and Tata Steel Nederland), six research and technology organizations (K1-MET, ArcelorMittal Innovacion, ArcelorMittal Maizières Research, RINA-CSM, CRM Group, and VDEh-Betriebsforschungsinstitut), two universities (Montanuniversität Leoben and Università del Salento) and four industry partners covering logistics and equipment supply (Danieli, DB Cargo, Innofreight Solutions, Innofreight Germany).

Each project partner provides essential knowledge and specific competences that will be fundamental to the success and advancement of the project.

PROJECT LAUNCH

KICK-OFF MEETING IN LOEBEN

Safe H-DRI was launched with an official kick-off meeting on the October 12th, 2024.

Combining physical attendance and virtual participation, consortium members gathered in Leoben to formally start the project at the Coordinator's premises.

The kick-off meeting laid the foundation for successful collaboration. With a shared vision and a clear strategic plan, the consortium is prepared to drive the project forward towards its ambitious goals.

START DATE | 01/10/2024
PROJECT DURATION | 42 months
TOPIC | RFCS-2023-02-RPJ
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PUBLICATION DATE | March 2025

To be informed about the most recent news and developments, visit our website, follow us on LinkedIn, and sign up for our newsletter on www.safe-h-dri.eu

The project receives funding from the European Union's Research Fund for Coal and Steel research programme under grant agreement number 101150482.