



HBI C-Flex

The HBI C-Flex project has the goal to determine the reoxidation behaviour and stability of direct reduced and hot briquetted iron (HBI) with variable iron and carbon content to promote safe handling and transport for future decarbonised steel production.

The project in a nutshell

HBI C-Flex is a 3.5-year project funded by the European Union's Research Fund for Coal and Steel research programme. It demonstrates the direct reduction of iron ore using various qualities (including lower-grade ores typically not used for direct reduction) followed by hot briquetting. The consortium consists of 10 partners and includes steel producers, RTOs, technology providers, and universities from Austria, Germany, Belgium, France and Netherlands, each of which has specific knowledge, skills and equipment to achieve the project objectives. A Supportive Advisory Board, consisting of 14 globally operating companies along the supply chain and led by the International Iron Metallics Association, assists with their knowledge and expertise regarding HBI production and handling.

Sneak peek

[Meet Sergej, leader of WP2](#)

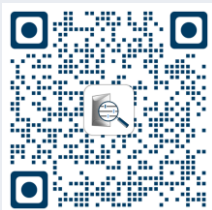
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 Coordinated by: K1-MET, Austria

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Meet Sergej – he leads work package 2

I work at the Chair of Ferrous Metallurgy (CFM) at Montanuniversitaet Leoben, where we see great opportunities in the HBI C-Flex project. We are committed to sustainable iron and steel production and collaboration with industrial partners, universities and research institutes.

The CFM leads the WP2 and is responsible for the design of the HBI production and reoxidation trials. Our tasks involve coordinating the development of equipment with ArcelorMittal, CRM, TATA Steel, TU Bergakademie Freiberg and Montanuniversitaet Leoben to map the entire process chain, which covers iron ore reduction, briquetting and re-oxidation tests.

We have considerable expertise in the reduction of fine ores and are now seeking to apply this knowledge by establishing a test rig for re-oxidation tests. The aim is to conduct high-quality application-orientated basic research to understand and describe the fundamental mechanism of re-oxidation of briquetted direct reduced iron.

Round robin

For the HBI C-Flex project the laboratories of voestalpine Stahl Linz, voestalpine Stahl Donawitz, ArcelorMittal, TATA Steel, and TU Bergakademie Freiberg participated in an project internal round robin test. This method is used for quality assurance and ensures comparable analysis results during the project. Six iron ore types (3 DR-grade and 3 BF-grade) were selected for testing.

Chemical composition experiments were performed at each partner laboratory using different devices and methods. To ensure consistency and reliability, the round-robin test is essential for project partners, who rely on the accuracy of the results. Incorrect test results could lead to additional costs and work.

As a result of such a round-robing test it could be confirmed that the chemical composition tests produced reliable results across the different laboratories. The comparable outcome serves as a reassuring start for the work ahead.



11th status meeting at AMMR

On April 17th-18th, 2024, the HBI C-Flex consortium held a two-day project meeting at ArcelorMittal Maizières Research (AMMR) in France. Day one included status updates on work packages and administrative topics, followed by a networking dinner. Day two featured a workshop on intellectual property rights (IPR) and exploitation. Participants, both in-person and online, collaborated in groups, presenting their findings and engaging in a fruitful discussion. The meeting concluded with a tour to the testing facilities, providing insights into AMMR's experimental work. Many thanks to the ArcelorMittal Maizières Research team for their hospitality!



Supportive Advisory Board (SAB)

The International Iron Metallurgy Association leads our Supportive Advisory Board, comprising 14 globally operating companies along the supply chain. All SAB members are aware of the importance of the HBI C-Flex project and the necessity that the topic of handling zero-carbon HBI must now be investigated to facilitate the push forward towards a modern, resource-efficient and competitive economy. They provide valuable input based on their knowledge and expertise regarding HBI production and handling.



Market analysis

In early 2024 the HBI C-Flex team conducted a market analysis with quantitative data obtained from a literature review, including information and data concerning iron ore mining companies, DR-grade pellet suppliers, HBI production, shipments of DRI and HBI, as well as HBI/steel producing companies and global crude steel production. Qualitative data was derived from deep-dive interviews with stakeholders along the supply chain, focusing on the industry, competitive landscape, requirements, market gaps, and barriers.

We are still looking for your valuable insights! Participate in our short survey (only one minute) and share your opinion on the future of the usage of HBI. During our project, the consortium will carry out experiments and research to provide answers to the questions raised in the online survey.

To participate

[click here!](#)



Key achievements

- ✓ Website is live
- ✓ 7 deliverables submitted
- ✓ Successful realisation of the round-robin
- ✓ Stakeholder interviews completed

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