



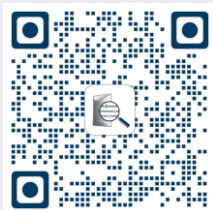
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HBI C-Flex

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 decarbonisation of the steelmaking process.

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 the Netherlands, each of which has specific knowledge, skills and equipment to achieve the project objectives. A Supportive Advisory Board, consisting of 13 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.



Grant agreement ID: 101112479



Start date: July 1st, 2023



Duration: 42 months



Budget: 2.4 Mio. €



Coordinated by: K1-MET, Austria



Contact: info@hbi-c-flex.com





Meet Lukas Schmidt

Lukas studied Process Engineering at the Technical University of Graz (Austria) and the Technical University of Padova (Italy). During his studies, he had internships at Verbund Umwelttechnik, VTU Engineering and Philips Innovation Center. After graduating, he worked for Semmelrock/Wienerberger in quality and laboratory management. From 2010 to 2018, he was a scientific employee at the Chair of Ferrous Metallurgy at the Technical University of Leoben.

In 2018, Lukas joined K1-MET, where he is now working as a team leader. His main research areas are metallurgical process efficiency, the recycling of residues of the iron and steel industry, direct and smelting reduction, and the recycling of lithium-ion batteries. He has been supporting several national and European projects in these research fields.

Interview with our coordinator

Lukas Schmidt (K1-MET GmbH)

Question (Q) 1: Where did the idea for this project come from?

Back in 2020, the International Iron Metallics Association, Primetals Technology Austria, voestalpine Stahl Donawitz, Montanuniversität Leoben and K1-MET started a cooperation within a work package at the Austrian funded COMET Competence Center program of K1-MET. The goal was to investigate the reactivity of DRI and HBI. The study included a literature survey, and the team already developed a concept for reoxidation trials. The logical conclusion was that we initiated an RFCS-funded project with more international partners. That's when the HBI C-Flex project was born.

Q2: What kind of meetings do you prefer and why? (online or presence)

In general, I prefer presence meetings, as they are more personal, and you get to know project partners incomparably better, which is a great advantage for every project. On the other hand, online meetings are an efficient way to work together, monitor the progress and plan the next steps. As we have partners in Australia, Japan, Europe and America, online meetings - usually starting at 12:00 CET - are crucial for HBI C-Flex. In my mind, we developed the good habit of having online meetings every two months and a hybrid meeting every 9 months.

Q3: Are there any surprising synergies or cross-sector collaborations that have emerged during the project that were not initially anticipated?

HBI C-Flex comprises the whole HBI production chain. This means that we have partners from the whole value chain: iron ore suppliers, iron and steel producers, technology providers for reduction facilities as well as for briquetting, universities, associations and research centres. Of course, we hoped at the beginning of the project that there would be a fruitful collaboration, but now we are overwhelmed by the good teamwork and support of all partners. It is something that you cannot plan, it is a gift.

Q4: In your experience as a coordinator, what has been the most rewarding benefits of managing this project, both personally and professionally?

Professionally, it is the project goal and the goal that even goes beyond this project, which is supporting the steel industry to produce and handle hot briquetted iron coming from direct reduction also under usage of low-grade iron ores and the



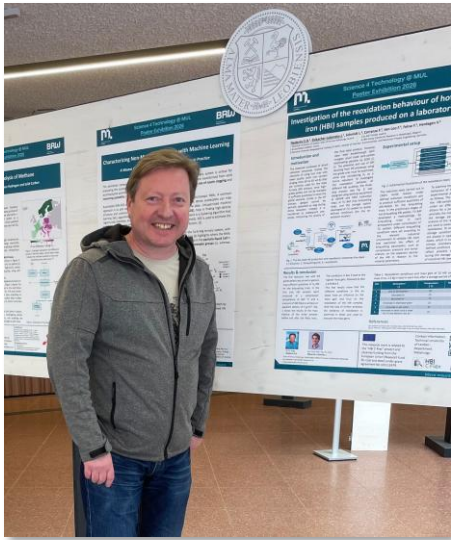
application of hydrogen-based reduction processes. I am grateful, that I have to opportunity to go step by step with the HBI C-Flex team towards that goal. It fills me with joy. My personal benefit is that I am experiencing that our team is even more than the sum of its excellent members.

Q5: Have there been any lessons learned from this project that could serve as best practices for future

RFCS projects or EU-funded initiatives?

In every project and working process, I can learn something that I can apply in my future work. Specific examples of HBI C-Flex are the Action plan, in which tasks are divided into small scheduled next steps or the HBI C-Flex webpage (hbi-c-flex.eu) which gives everyone a good overview and insights into the main activities.

Poster presentations



This year, two poster were presented within the HBI C-Flex project. Both highlighted first results of our ongoing experiments.

At the Annual Conference of the DECHEMA/VDI Working Party “Agglomeration and Bulk Handling” in Dresden (March 16th-18th, 2026), Franz Fehse, Andreas S. Bräuer, and Volker Herdegen presented their work on “Hot briquetting of directly reduced iron with variable carbon contents and degree of metallisation.”

In addition, at the Science 4 Technology @ MUL Poster Exhibition 2026 at Montanuniversität Leoben, Nesterov et al. showcased their poster titled “Investigation of the reoxidation behaviour of hot briquetted iron (HBI) samples produced on a laboratory scale.”

Both posters are available for download on our website.

21st Status Meeting in Freiberg (GER)

In January, the HBI C-Flex team met in Freiberg, Germany, for our 21st project status meeting, kindly hosted by our partner TU Bergakademie Freiberg (TU BAF), Germany. Consortium partners and members of our Supportive Advisory Board came together for two productive days aligning our activities and setting a clear focus on making the most of the final year of the project. After the meeting, we had the opportunity to explore TU BAF’s and Köppern’s laboratory facilities. Seeing two briquetting experiments in action provided us valuable insights into the research infrastructure supporting our work. A big thank you to all partners for the great discussions and strong collaboration, and especially to our hosts at TU BAF for the warm welcome and excellent organisation.



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