

London, December 19, 2022

Primetals Technologies, Fortescue, and voestalpine to jointly evaluate groundbreaking green ironmaking plant

- **Target is to design and engineer a net-zero emission industrial-scale prototype plant for producing hydrogen-based hot metal**
- **Project planning phase to be finished November 2023**

On December 19, Primetals Technologies, together with its strategic partners Mitsubishi Corporation, Fortescue, a global leader in the mining and heavy industries, and globally leading steel and technology group voestalpine, signed a Memorandum of Understanding (MoU).

The partnership is aimed at designing and engineering an industrial-scale prototype plant with a new process for net-zero-emission ironmaking at the voestalpine site in Linz, Austria. The collaboration will also investigate the implementation and operation of the plant.

The new ironmaking process will be based on Primetals Technologies' HYFOR and Smelter solutions. HYFOR is the world's first direct reduction process for iron ore fines that will not require any agglomeration steps, like sintering or pelletizing. A pilot plant has been in operation since the end of 2021, and Primetals Technologies has run numerous successful test campaigns over the last year including successful trials on Fortescue's Pilbara iron ore products.

The new Smelter technology from Primetals Technologies is a furnace powered by electrical energy. It is used for melting and final reduction of direct reduced iron (DRI) based on lower-grade iron ores. In that way, it produces alternative green hot metal for the steelmaking plant.

Game-changing technology

"voestalpine has a clear plan to decarbonize steel production with the greentec steel program. An important first step is the incremental shift from the blast furnace route to a hybrid-electric steel pathway from 2027. Over the long term, our mission is carbon neutral steel production using green hydrogen, for which we are already undertaking intensive research into promising breakthrough technologies. With the joint project with Primetals Technologies and Fortescue, we are taking another new path towards achieving the goal of CO₂-neutral steel production by 2050," says Hubert Zajicek, Member of the Management Board of voestalpine AG and Head of the Steel Division.

Dr. Alexander Fleischanderl, Senior Vice President and Head of Green Steel at Primetals Technologies, adds: “This is a decisive step for the transition to green steel production, and we are very excited to be a key part of it. Our HYFOR technology is a result of decades of work in the direct reduction and hydrogen space. The Smelter is another game-changing green technology we are developing. By combining these solutions, we will enable a sustainable technology for green ironmaking over the long term”.

Fortescue’s main responsibility in the new project is to provide knowledge about iron ore quality and preparation. In addition, Fortescue will supply various iron ores for the new plant.

Fortescue Future Industries (FFI) CEO Mark Hutchinson said the partnership was the perfect alignment of the company’s mining and renewable energy goals: “Fortescue has more than two decades of expertise in the iron ore industry, rising to become one of the world’s lowest cost exporters, now shipping more than 180 million tons of iron ore a year. Global demand for iron ore and steel will remain strong for years to come, but we need cleaner, greener industry powered by green energy to eliminate emissions.”

An industrial prototype

The project planning phase will be used to design an industrial-scale prototype plant with a capacity of between three to five tons of green hot metal per hour. It is the first solution to link a hydrogen-based direct reduction plant for iron ore fines with a Smelter.

The main goal of the project planning phase is to develop the basis for decision to realize a prototype plant capable of continuous operation, and then to gain the know-how needed for the next step, a commercial full-scale plant. Another target is to investigate the use of various types of iron ores to produce DRI, hot briquetted iron (HBI), and hot metal and, as a next step, draw conclusions about the individual process steps as well as different combinations of them.

The hydrogen used in the new plant will mainly come from Verbund, voestalpine’s and Austria’s leading renewable energy producer, who operates a proton exchange membrane (PEM) electrolyzer named H2Future. Located in Linz, this plant has a capacity of over six megawatts, and is still the world’s largest of its kind used at a steel plant. The H2Future plant will be upgraded to allow for the compression and storage of hydrogen gas before use in the combined HYFOR and Smelter plant.

About voestalpine

voestalpine is a globally leading steel and technology group with a unique combination of materials and processing expertise. With around 500 group companies and locations, voestalpine has entities in more than 50 countries across all five continents. With its premium products and system solutions, it is a leading partner to the automotive and consumer goods industries as well as the aerospace and oil and gas industries. In addition, voestalpine is also the world market leader in steel products for railway systems, tools, and special sections. voestalpine is fully committed to the global climate goals, and its greentec steel program represents a clear plan for decarbonizing the production of steel www.voestalpine.com

About Fortescue

Fortescue Future Industries (FFI) is a global green energy company committed to producing green hydrogen, containing zero carbon, from 100 percent renewable sources. FFI is leading the green industrial revolution, developing technology solutions for hard-to-decarbonise industries, while building a global portfolio of renewable energy, green hydrogen and green ammonia projects. FFI is also leading the world effort to decarbonize hard-to-abate sectors and is responsible for the proposed decarbonization of one of the biggest resources companies in the world by 2030 – its parent company Fortescue Metals Group www.fortescue.com



Primetals Technologies, Fortescue, and voestalpine signed the Memorandum of Understanding on Monday, December 19. From left to right: Dr. Franz Androsch Senior Vice President and Head of R&D and Innovation at voestalpine, Hubert Zajicek, Head of the Steel Division at voestalpine, Sara Edmonson, GM Regional Lead Europe and the UK at Fortescue, Dr. Etsuro Hirai, CTO at Primetals Technologies, and Andreas Viehböck, Head of Upstream Technologies at Primetals Technologies

This **press release** and a **press picture** are available at www.primetals.com/press/

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Primetals Technologies, Limited, headquartered in London, United Kingdom, is a pioneer and world leader in the fields of engineering, plant building, and the provision of lifecycle services for the metals industry. The company offers a complete technology, product, and services portfolio that includes integrated electrics and automation, digitalization, and environmental solutions. This covers every step of the iron and steel production chain—from the raw materials to the finished product—and includes the latest rolling solutions for the nonferrous metals sector. Primetals Technologies is a joint venture of Mitsubishi Heavy Industries and partners, with around 7,000 employees worldwide. To learn more about Primetals Technologies, visit the company website www.primetals.com.

