
London, September 25, 2025

Construction Begins on Hydrogen-Based Ironmaking Plant in Linz, Austria

- **Groundbreaking ceremony marks the start of construction for industrial-scale demonstration plant targeting hot metal production with potential net-zero CO₂ emissions**
- **Plant will produce hot briquetted iron, hot metal, and pig iron using Hydrogen-based Fine-Ore Reduction (HYFOR®) and Smelter solutions from Primetals Technologies**
- **Startup scheduled for the end of 2027**

Primetals Technologies, together with its project partners Rio Tinto, a global mining and metals company and one of the world's leading producers of iron ore, and globally leading steel and technology group voestalpine has recently started construction work on an industrial-scale demonstration plant at the voestalpine site in Linz, Austria. On September 25, 2025, this milestone was commemorated with a groundbreaking ceremony attended by politicians and industry leaders.

Potential Net-Zero CO₂ Emissions

The project will implement a new process for potential net-zero CO₂ emissions ironmaking. The partners aim to accelerate the development of hydrogen-based direct reduction and smelter technologies, providing a potential alternative to blast furnaces for hot metal and commercial hot-briquetted iron (HBI) production. The process is capable of using all types of low-to-high grade ores but focus on low-to-medium-grade ores, which make up the majority of the world's supply. The plant is scheduled to start up at the end of 2027, with a capacity of 3 tons per hour.

"At voestalpine, we have already made a successful start on our path to the next generation of steel production. To achieve our long-term goal of net-zero CO₂ emissions in steel production by 2050, we are researching new processes in collaboration with partners from industry and science, as well as investing in groundbreaking steel production projects. Seeing construction underway of the globally unique Hy4Smelt demonstration plant once again confirms our technological and innovation leadership in green steel production," says Herbert Eibensteiner, CEO of voestalpine AG.

Hydrogen-Based Direct Reduction and Smelting

HYFOR is the world's first direct reduction technology for iron ore fines that eliminates the need for agglomeration of the iron ore fines. It features lower reduction gas temperatures, in-situ recycling of captured dust particles, and high metallization of the direct-reduced iron (DRI) and HBI. Primetals Technologies began developing HYFOR a decade ago, and since 2021, a pilot plant owned and operated by Primetals Technologies at the voestalpine premises in Donawitz, Austria, has run more

than 50 successful campaigns with basically all major iron ore sources. The Smelter is a furnace powered by renewable energy that melts and completes the reduction of DRI to produce hot metal or pig iron and a value-added slag suitable as cement clinker substitute.

By using certified green hydrogen from the existing H2Future electrolysis plant at voestalpine's site, these plants will produce hot metal similar to that from a blast furnace, but with the potential for net-zero CO₂ emissions. HYFOR and Smelter are expected to be commercially available from 2028 and will have the capacity to meet the needs of the steel sector.

"With today's groundbreaking, we are taking a major step toward net-zero CO₂ emissions in ironmaking. We are about to implement technology solutions that have the potential to revolutionize the entire industry," says Dr. Alexander Fleischanderl, Chief Technology Officer and Head of Green Steel at Primetals Technologies. "The steel industry urgently needs to transition. Coal-fired blast furnaces, which have been the backbone of ironmaking for centuries, come at a significant and growing environmental cost. This is exactly where HYFOR and Smelter come in: with these solutions, we are paving the way for a new era in ironmaking."

Rio Tinto will supply 70 percent of the iron ore for the Hy4Smelt industrial-scale demonstration plant, as well as provide technical support to the project. Rio Tinto will also support the development and future commercialization of the HYFOR and Smelter technologies.

"It's fantastic to see construction now underway for the Hy4Smelt industrial-scale demonstration plant in Linz. This milestone builds on the momentum from April this year and reflects the strong collaboration across the consortium. By contributing our iron ores and technical expertise, we're helping to explore new pathways for low-emissions ironmaking. There's still a lot to learn, but we're optimistic about the potential of fluidized bed and electric smelting technologies to support the steel industry's transition," said Rafael Azevedo, General Manager, Iron Ore Sales and Marketing Atlantic, Rio Tinto.

For the HYFOR and Smelter project in Linz, Primetals Technologies has also formed a strategic partnership with Mitsubishi Corporation, an integrated trading and investment company, as a co-investor. They will provide valuable experience and insight into materials supply solutions, product trading, and market needs.

EU and Austrian Government Funding

Funding for the investment and operation of this prototype plant has been provided by the Austrian federal government through its "Transformation of Industry" program managed by Kommunalkredit Public Consulting (KPC) and the "Twin Transition" initiative managed by Austria Wirtschaftsservice (aws). In addition, the European Union supports the venture through the European Union Research Fund for Coal and Steel within the Clean Steel Partnership (CSP) and the European Union Clean Hydrogen Partnership within the Hydrogen Valleys, i.e. areas where hydrogen serves more than one end sector or application in the mobility, industry, and energy sectors.

About voestalpine

voestalpine is a globally leading steel and technology group with a unique combination of materials and processing expertise. voestalpine, which operates globally, has around 500 Group companies and locations in more than 50 countries on all five continents. The voestalpine Group has been listed

on the Vienna Stock Exchange since 1995. With its premium products and system solutions, voestalpine is a leading partner to the automotive and machinery industries, as well as to the aerospace and energy industries. The company is also the global market leader in railway systems and special sections. voestalpine is committed to the global climate goals and has a clear plan for transforming steel production with its greentec steel program. In the business year 2024/25, the Group generated revenue of EUR 15.7 billion, with an operating result (EBITDA) of EUR 1.3 billion; it has around 49,700 employees worldwide.

About Rio Tinto

Rio Tinto is a leading global mining and materials company. It operates in 34 countries and produces iron ore, copper, aluminum, critical minerals and other materials needed for the global energy transition. www.riotinto.com

About Mitsubishi Corporation

Mitsubishi Corporation is a global integrated business enterprise that develops and operates business together with its offices and subsidiaries worldwide. MC has 8 Business Groups that operate across virtually every industry: Environmental Energy, Material Solution, Mineral Resources, Urban Development and Infrastructure, Mobility, Food Industry, Smart-Life Creation, and Power Solution.



Groundbreaking ceremony for the HYFOR and Smelter solutions from Primetals Technologies.

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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 Group Company of Mitsubishi Heavy Industries, with around 7,000 employees worldwide. To learn more about Primetals Technologies, visit the company website [primetals.com](https://www.primetals.com).