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Primetals Technologies Receives Innovation Award for HYFOR from Austrian Government

- **Award is the Austrian governments' highest for contributions to sustainable economic development**
- **HYFOR recognized as the world's first direct reduction process for iron ore fines that does not require any prior agglomeration steps**
- **Pilot plant in operation since 2021 – scale-up of production expected to follow soon**

Primetals Technologies has recently received the “National Prize for Innovation” from the Austrian government. The prestigious award was presented at a special ceremony in Vienna, Austria, on November 16. According to the Austrian government’s press release, hydrogen-based fine-ore reduction (HYFOR) is a radical direct reduction process poised to become widely applicable soon.

A significant contribution

The innovation Prize is the Republic of Austria’s highest award for honoring significant contributions by Austrian companies to the country’s sustainable economic development. The team of experts from Primetals Technologies Austria awarded with the prize has been developing HYFOR since 2016, with a pilot plant in Donawitz, Austria, which has been operational since 2021. Primetals Technologies has run numerous successful test campaigns at the pilot plant over the last few years.

Fluidized-bed technology

A groundbreaking technology, HYFOR is a direct reduction process that does not require any agglomeration steps, like sintering or pelletizing. It consists of three parts: a preheating and oxidation unit where the fine ore is heated up to approximately 900 degrees, a reduction unit based on a fluidized-bed technology in which hydrogen removes oxygen particles from the iron oxide to produce metallic iron, and an off-gas treatment plant, which recycles the dust created during the reduction process.

Last December, Primetals Technologies signed a Memorandum of Understanding (MOU) with its partners Fortescue, a global leader in the mining and heavy industries, and leading steel and technology group voestalpine. The collaboration is aimed at designing and engineering an industrial-scale prototype plant for net-zero ironmaking based on the HYFOR and Smelter solutions of Primetals Technologies. The new Smelter technology is a furnace powered by electrical energy and used for the melting and final

reduction of direct reduced iron made from lower-grade iron ores. The Smelter therefore is an innovative alternative for the production of green hot metal for the steelmaking plant.

The joint project teams, including Primetals Technologies' strategic partner Mitsubishi Corporation, have been working closely together throughout 2023 and are finalizing preparations to proceed with the next steps in the realization of the industrial-scale prototype plant, including assembly works and implementation.

A cost-effective, net-zero process

With HYFOR, steel producers on the search for green alternatives to blast furnaces might well find just what they are looking for. A net-zero ironmaking process, it is also cost-effective compared with routes that rest on prior agglomeration steps. The absence of sintering and pelletizing processes ensures a reduction in CAPEX and OPEX.



The winning team from Primetals Technologies, celebrating on stage during the ceremony for the National Prize for Innovation in Vienna.



Primetals Technologies ground-breaking HYFOR plant in Donawitz.

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