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Media Release

BlueScope, BHP and Rio Tinto select WA for Australia's largest ironmaking electric smelting furnace pilot plant study

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Australia's two largest iron ore miners and its biggest steelmaker have selected the Kwinana Industrial Area, south of Perth, as the location to develop Australia's largest ironmaking electric smelting furnace[1] (ESF) pilot plant.

The groundbreaking project combines the expertise of BlueScope, BHP and Rio Tinto to test technology to enable the use of Pilbara iron ore to produce iron without the need for traditional blast furnaces, as the companies come together to try to accelerate the decarbonisation of steelmaking.

The industry leaders formed the NeoSmelt collaboration in February, combining BHP and Rio Tinto's deep knowledge of Pilbara iron ore, with BlueScope's unique operating experience in ESF technology.

The NeoSmelt parties also announce Woodside Energy will join the consortium as an equal equity participant and energy supplier[2], subject to finalising commercial arrangements.

The pilot plant aims to prove Pilbara iron ore can be used to produce lower-carbon[3] emissions molten iron using direct reduced iron (DRI)-ESF technology.

The pilot plant would produce 30,000 to 40,000 tonnes of molten iron a year. It will initially use natural gas to reduce iron ore to DRI, but once operational, the project aims to use lower-carbon emissions hydrogen to reduce iron ore.

If successful, NeoSmelt has the potential to open a pathway to near-zero emissions[4] steelmaking using Pilbara iron ore and ensure the longevity of Australia's iron ore industry.

The NeoSmelt parties assessed a number of pilot plant locations in Australia before selecting the Kwinana Industrial Area, utilising its access to transport logistics and existing infrastructure, coupled with support from a A$75 million contribution from the Western Australian Government.

Subject to funding, the project anticipates a decision to enter feasibility studies in Q2 2025 and is targeting final investment decision (FID) for the pilot plant in 2026, with operations expected to begin in 2028.

The NeoSmelt project remains open for collaboration with other parties that complement its objectives.

Western Australian Premier Roger Cook said: "Under my WA Labor Government, our State is becoming a global renewable energy powerhouse – creating the jobs of the future and setting up our economy for the long term.

"Securing NeoSmelt for Kwinana positions WA at the cutting edge of the global push to slash emissions from steel production – and means our Pilbara iron ore will be processed right here in WA.

“Putting the global steel industry on the pathway to near-zero emissions means more jobs in processing in WA, and a strong future for WA’s iron ore industry.”

BlueScope Chief Executive Australia, Tania Archibald said: “Today marks a significant milestone in what is truly a unique and transformative project to help decarbonise the steel industry. The progress made during the pre-feasibility stage is a testament to the collaboration of all parties involved.

“BlueScope’s role as Project Manager leverages our deep iron and steelmaking experience at the Port Kembla Steelworks and our unique capability as the operator of the world’s only electric smelting furnace processing DRI in New Zealand.”

BHP Western Australia Iron Ore (WAIO) Asset President, Tim Day said: “We're thrilled to be well on our way to bringing this cutting-edge technology to life right here in Western Australia.

“A successful pilot plant of this scale would be a huge achievement as we work with our partners, here and around the world, to help fast-track near-zero emission pathways for steelmakers using Pilbara ores.

“These are the Pilbara ores that power this nation's economy, so getting it right would be a major step forward in setting up WA and Australia to be an important part of a low greenhouse gas emission future.”

Rio Tinto Iron Ore Chief Executive, Simon Trott said: “We must find better ways to produce the most commonly used metal in the world, while meeting the needs of our planet and our climate objectives.

“We are excited to announce the location for Australia’s largest ironmaking ESF pilot plant is in Western Australia. It’s just one of the ways we’re working with our peers to develop the technology needed to reduce the carbon intensity of iron and steelmaking.

“The NeoSmelt pilot plant builds on the suite of projects Rio Tinto has underway with our customers and suppliers to find better ways to accelerate their efforts to meet their decarbonisation targets.”

Woodside Energy’s Executive Vice President & Chief Operating Officer Australia, Liz Westcott said: “Woodside is excited that it will join the NeoSmelt project as an equal equity participant and energy supplier alongside BlueScope, BHP and Rio Tinto, subject to finalising commercial arrangements.

“Natural gas and hydrogen may enable emissions reductions in steelmaking, and we are proud to bring to the NeoSmelt project our expertise, experience and know-how as a global supplier of energy.

“Woodside supports the NeoSmelt project’s goals of exploring lower-emissions steelmaking pathways for Pilbara iron ore and unlocking new skills and capabilities through the energy transition.

Federal Resources Minister and Member for Brand, Madeleine King said: “Kwinana was built in the 1950s to power Western Australia and under the Cook and Albanese Governments it will remain the engine room of this State for generations to come.

“This is a significant project for Kwinana that will create many highly skilled and well-paid jobs to build our national capability.

“Under the Albanese Government’s Future Made in Australia agenda, the State and Federal Government are working together to make best use of our natural advantages, to process more of what we mine here, to secure our sovereign capability and to power the world’s energy transition.”

Notes to editors

Pilot Electric Smelting Facility

The NeoSmelt pilot plant is intended to test and optimise production of iron from the electric smelting furnace (ESF), a type of furnace being developed by leading steel producers and technology companies targeting low CO2 emission-intensity steel. The ESF is capable of producing iron suitable for the basic oxygen steelmaking process. Iron ore is first converted to direct reduced iron (DRI) before being charged into the ESF. Together, the DRI-ESF equipment can replace the traditional blast furnace. Estimates show reductions of up to 80^ per cent in CO2 emission intensity are potentially achievable processing Pilbara iron ore through a DRI-ESF pathway, compared with the current industry average for the conventional blast furnace steel route.

Other lower CO2 emission-intensity production routes, such as electric arc furnaces, require scrap steel and DRI produced from high grade iron ore. The ESF allows for greater flexibility in input raw materials, addressing one of the key barriers to wider adoption of lower-carbon emissions technology. The ESF also has the potential to be integrated into a steel plant's existing downstream production units.

[1] Also known in the industry as an "electric melter".

[2] Energy supply may include hydrogen, natural gas and electricity.

[3] Lower carbon has the characteristic of having lower levels of associated potential greenhouse gas emissions when compared to historical and/or current conventions or analogues, for example relating to an otherwise similar resource, process, production facility, product or service, or activity.

[4] Although there is no standardised universal definition of near-zero emissions, the IEA has defined it as 0.40 tonnes of CO2-e per tonne of crude steel for 100 per cent ore-based production (no scrap).

^ Assumes utilisation of renewable energy to power the DRI-ESF facility and zero emissions hydrogen in the DRI plant. The remaining CO2 emissions are from carbon required in the process of making liquid iron suitable for the basic oxygen steelmaking process.

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