

Rio Tinto partners with Calix to test low-emissions steel making in Western Australia, pauses Biolron

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[Rio Tinto](#) has signed a Joint Development Agreement (JDA) with Australian environmental technology company Calix to support construction of Calix's Zero Emissions Steel Technology (Zesty^{™}) demonstration plant in Western Australia, which could enable Pilbara iron ores to be used in lower-emissions steel making.

If approved, the demonstration plant will be built at a site in Kwinana, south of Perth, that had been earmarked for Rio Tinto's previously announced Biolron^{™} Research and Development Facility and associated pilot plant.

Rio Tinto has determined that the current furnace design for Biolron requires additional development to minimise technical risks and optimise its performance.

It remains committed to the long-term potential of Biolron technology, and research and development continues in partnership with the University of Nottingham and sustainable technology company, Metso.

Rio Tinto will invest more than A\$35 million, subject to project milestones and comprised of in-kind and financial contributions, to assist Calix with the Zesty Green Iron Demonstration Plant, which also has Australian Renewable Energy Agency (ARENA) support.

The Zesty process is compatible with lower grade iron ore and uses electric heating and hydrogen reduction to produce reduced-emissions iron.

Rio Tinto Iron Ore Chief Executive Matthew Holcz said: "The world needs low-emissions steel if it is going to decarbonise, and we continue to look at a range of ways Pilbara iron ores can help to do this as new technologies emerge.

"We're pleased to partner with Calix, an Australian technology company, to help progress the Zesty technology to be able to use Pilbara iron ores for lower-emissions steel making.

"In parallel, we'll keep progressing Biolron with our partners, the University of Nottingham and Metso, to further its potential. Both projects are part of our work to reduce emissions and support the future of iron ore in Australia and the communities that depend on it."

Western Australian Premier Roger Cook said: "Locally made green iron is a key part of my vision to become a renewable energy powerhouse and make more things here.

"Coupled with my government's recent announcement that government will take an "if not, why not" approach to green steel procurement on major government projects, the Zesty Green Iron Demonstration Plant will support our efforts to diversify WA's economy so that it can remain the strongest in the nation.

"I welcome this agreement between Calix and Rio Tinto, which will play an important role in growing this exciting new industry in WA."

The Kwinana location provides access to established utilities, ports and other infrastructure. It is also near

the NeoSmelt¹ facility for potential downstream processing of Direct Reduced Iron produced by the Zesty plant. Rio Tinto is one of five companies developing the NeoSmelt project, which earlier this year secured ARENA funding.

Calix also has a A\$44.9m ARENA grant, subject to conditions, for the Zesty Green Iron Demonstration Plant, as previously announced by the company.

Calix Chief Executive Officer Phil Hodgson said: "The Joint Development Agreement with Rio Tinto is a major milestone in the commercialisation of Zesty. It provides cash and hands-on support, including industry leading resources, expertise and market reach to progress the Zesty Demonstration project.

"This strong support from Rio Tinto provides further validation of the potential for deployment of the Zesty technology to the world's largest minerals and metals market, its potential to help decarbonise a critical industry responsible for ~8% of global CO₂ emissions, and the opportunity to help future-proof Australia's largest source of export income. We look forward to working with Rio Tinto, further industry partners and other key stakeholders, and ARENA on this important Australian project."

Under the terms of the JDA, Rio Tinto will support the Zesty project to reach a Final Investment Decision (FID) through technical support, engineering services and advocacy.

Subject to FID and successful project construction, Rio Tinto will supply up to 10,000 tonnes of a range of Pilbara iron ores for use in plant commissioning and the initial testing phase of the project, as well as introductions to potential customers for downstream use of the Zesty product.

The partnership enables Rio Tinto to exercise a non-exclusive global and perpetual licence agreement for the potential commercial use of the Zesty technology, sub-licence the technology to its affiliates and customers, and act as a non-exclusive global marketing agent for the Zesty technology.

Additional information

About Calix and Zesty

Calix Limited is an Australian technology company focused on industrial decarbonisation and sustainability.

Calix's Zesty technology uses a combination of electric heating and hydrogen reduction to produce green iron and ultimately, green steel. Zesty aims to provide lowest cost pathways to green iron and steel through minimal hydrogen consumption, flexible electric heating compatible with intermittent renewable energy sources, elimination of ore pelletisation, and enabling the use of fines and lower-grade iron ores. Zesty pilot-scale trials in collaboration with the Heavy-Industry Low-carbon Transitions Cooperative Research Centre (HILT CRC) and industry partners have proven the ability of the technology to produce green iron from a range of iron ore types and grades².

The Zesty Green Iron Demonstration Plant is designed to produce up to 30,000 tonnes per annum of hydrogen direct reduced iron (H₂-DRI) or hot briquetted iron (HBI) from a range of iron ore sources. The Demonstration Plant intends to provide an industry-wide facility for the non-exclusive toll processing of iron ores into H₂-DRI or HBI, with the aims of supporting the ongoing viability of Australian iron ore in a low emissions steel value chain and the development of a green iron industry in Australia. The Project is supported by a grant of up to \$44.9m from the Australian Renewable Energy Agency, subject to matched funding being secured.

The Zesty Demonstration Project has entered its detailed design engineering phase to help inform a FID, expected in 2026.

About Biolron

Biolron was invented by Rio Tinto's steel decarbonisation team after a decade of extensive research. Electricity consumption in the Biolron process is about one-third of the electricity required by other steelmaking processes that rely on renewable hydrogen.

Biolron uses raw biomass such as agricultural by-products like wheat straw, barley straw, sugarcane bagasse, rice stalks, and canola straw, instead of coal as the reducing agent.

Footnotes

¹ No affiliation with NeoSmelt is implied.

² Calix ASX Announcement Zesty Deep dive presentation 31 July 2025.

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