

Press Release

For immediate release

HAMR Energy and Supercritical to shake up the world of methanol with groundbreaking, government-backed, green partnership.

- Consortium embarks on AUD 1.5million (GBP 800,000) project that will demonstrate that renewable methanol costs can be reduced by up to 20% with ultra-high efficiency, high pressure green hydrogen production.
- The partnership aims to commercialise the concept and drive commercial world scale systems to market by 2030, enabling a global methanol opportunity worth a potential AUD 370 billion.

Melbourne and London, 23 May 2024: HAMR Energy (HAMR) and Supercritical Solutions (Supercritical) have been awarded close to AUD 1 million (GBP 480,000) in funding from the Australia-UK Renewable Hydrogen Innovation Partnership.

The project brings together game-changing innovation in electrolysis from the UK and a burgeoning market opportunity for renewable methanol in Australia.

The first phase will deliver a comprehensive techno-economic feasibility study evaluating the integration of high-pressure hydrogen from Supercritical's electrolyzers into HAMR's hybrid methanol plant design. The project will include empirical testing of Supercritical's advanced catalysts and a full lifecycle analysis evaluating the environmental impact of the electrolyzers' novel membraneless design. The pioneering consortium will de-risk the concept for progression to pilot stage, with deployment of Supercritical's technology in Australia as part of a renewable methanol production facility from 2026.

With potential to reduce the cost of renewable methanol by up to 20% relative to incumbent electrolysis technologies, Supercritical's technology offers a world-leading system efficiency of 42 kWh/kgH₂ (95% HHV) whilst delivering hydrogen over 200 bara. The delivery significantly simplifies compression and storage infrastructure for methanol facilities offering a transformative advantage in capital and operational expenditures.

The methanol industry, the third largest user of hydrogen today, is responsible for 38.8M tonnes CO₂e. This methanol is used today as a feedstock for products from plastics to fuels and to achieve net zero, these markets must trend to renewable methanol.

The vast potential of renewable methanol as a substitute for heavy fuel oil is recognised through the growing commitment within the shipping industry, led by stakeholders like Maersk and supported by the International Maritime Organisation's net-zero ambitions to reduce global GHG emissions.

In collaboration with UK partners Astrimar Ltd and the Manufacturing Technology Centre, the initiative will develop a containerised product concept and outline a comprehensive certification and compliance roadmap for markets in the UK and Australia.

Monash University in Melbourne is also participating in the Project. Supplying access to leading academic expertise and engineering resources of the university's Faculty of Engineering to support the project, including through the Industry Innovation Program.

The Australian Minister for Climate Change and Energy announced the successful applicants on 7 May 2024 in a speech to the Australian British Energy Transition & Investment Summit held through the Australian British Chamber of Commerce.

This award builds on the Australia–UK Clean Technology Partnership, signed in 2021 (which had clean hydrogen as a key technology) and the Australia-UK Free Trade Agreement that entered into force in 2023. The Australian government has just announced their new Hydrogen Production Tax Incentive (HTPI), offering AUD 2 per kg of hydrogen over a ten-year period, starting from 2027. Such incentives are perfectly timed to facilitate the commercialisation of this green hydrogen to methanol concept.

Quotes attributable to Supercritical:

Luke Tan, Chief Product Officer and Co-founder:

"Given that I started my career designing methanol plants, it's exciting to finally be able to reveal that Supercritical's pioneering innovation in green hydrogen is here to ensure tomorrow's renewable methanol facilities are cost effective and zero emission. This project is a return to my roots but also a leap into the future of sustainable energy."

Matt Bird, Chief Executive Officer and Co-founder

"At Supercritical, we are not just engineering electrolyzers; we are crafting the keystones for the next generation of clean energy infrastructure. Our collaboration with HAMR Energy signifies a leap towards making zero-emission renewable fuels a mainstream reality. This venture underpins our commitment to innovation and our belief that the right technology can indeed turn the tide on global energy challenges."

Quotes attributable to HAMR Energy:

Richard Owen OAM, Chairman of the Board, HAMR Energy

"Decarbonisation requires global solutions. HAMR and Supercritical have some of the brightest science and engineering minds working to solve real decarbonisation challenges and the Government support of these young companies is most welcome and necessary to address the pace of energy transition."

Alex Smith, co-Founder, HAMR Energy.

"We have the opportunity for Australia to be a leader in the production of renewable methanol (*an alternate shipping fuel*). HAMR has some of the leading production projects in the region, however, we need to continue to pursue cost reduction opportunities and efficiencies. Collaboration with Supercritical is exciting as it has the potential to reduce the costs of renewable fuel production. "

About the Australia-UK Renewable Hydrogen Innovation Partnerships Program:

The [UK](#) and [Australian](#) Grant programs work together to facilitate a collaborative project. The program provides support to Australian companies in funding for hydrogen research, development and demonstration projects in partnership with UK companies, as part of the Government's Strategic International Partnerships measure.

About HAMR Energy ([LinkedIn](#))

HAMR Energy is a young renewable fuels company with a mission to accelerate the global energy transition by developing projects and technology to displace fossil fuels. Since 2021 HAMR has established a position as a leading project proponent of renewable methanol projects in Australia.

- Email: contact@HAMREnergy.com
- Website: <https://www.hamrenergy.com/>

About Supercritical ([LinkedIn](#))

Supercritical is at the forefront of the clean energy revolution, with a mission to dramatically reduce the cost of green hydrogen and address the most challenging 20% of global emissions. Established in 2020 in London, our vision is to catalyse a sustainable future where renewable energy solutions, like our pioneering electrolyser technology, are mainstream and financially viable without subsidies. By offering scalable, PFAS-free, membrane-free, and iridium-free solutions, Supercritical aims to lower hydrogen production costs to under £1/kgH₂ within this decade, driving the shift from grey to green energy across industries.

- Email: contact@supercritical.solutions
- Website: www.supercritical.solutions

About The Manufacturing Technology Centre:

Established in 2010, The Manufacturing Technology Centre (MTC) is an independent Research and Technology Organisation with the objective of bridging the gap between university-based research and the development of innovative manufacturing solutions, in line with the Government's manufacturing strategy. The MTC is part of the High Value Manufacturing Catapult, supported by Innovate UK, and its expertise is applicable across a variety of industry sectors, including the Built Environment. For more information visit: <https://www.the-mtc.org/>

About Astrimar ([LinkedIn](#))

Astrimar is an independent specialist engineering consultancy delivering excellence in Reliability, Integrity and Technical Risk Management, Technology Qualification, Innovative Engineering Design and Advanced Analysis. Established in 2010, the team are experts in developing innovative solutions through advanced approaches to Engineering design and analysis, Reliability & Data analysis, Technical risk, Integrity management, and Technology qualification best practice.

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