UNO TECHNOLOGY
Towards a carbon neutral future

30 July 2020

MEDIA RELEASE

Australia – U.S. partners to capture carbon more cheaply

Australia's role in addressing climate change has been boosted thanks to a U.S. funded partnership to improve the capture and storage of carbon dioxide from industrial emissions.

The U.S. Department of Energy's Advanced Research Projects Agency-Energy (ARPA-E) this month awarded more than AU$1.5 million to North Carolina-based 8 Rivers through its FLExible Carbon Capture and Storage program. 8 Rivers will work with Melbourne-based start-up UNO Technology on their project.

The competitive award will lead to the development of carbon capture and storage (CCS) technology that is cheaper, uses less energy than existing methods, and enables power generators to rapidly respond to grid conditions.

'8 Rivers, a global leader in novel low emission power generation, is working with us to drive down the cost of carbon dioxide capture and move towards a carbon neutral future,' says Barry Hooper, founder and Director of UNO Technology, who also holds an honorary appointment at The University of Melbourne.

'We're developing solutions with up to 65 per cent lower capital costs compared with building a new CCS-equipped power plant. Our approach also provides 10 to 15 per cent lower energy usage than existing carbon capture technologies.'

CCS has been recognised in Australia and internationally by the Intergovernmental Panel on Climate Change (IPCC) as part of the solution to climate change.

'UNO Technology and 8 Rivers will design, model and optimise low cost carbon capture systems that can be retrofitted to existing natural gas power generators,' says Mr Hooper. 'The funding will demonstrate our UNO MK3 carbon capture technologies' ability to provide flexible, low emissions electricity to emerging near-zero-emission power grids globally.'

'While this project focuses on removing carbon dioxide from gas turbines, our technologies are equally applicable to reducing emissions from all carbon dioxide emitting industries – including power; cement; iron and steel; waste to energy; and production of natural gas, hydrogen and biofuels.'

Mr Hooper says the project will advance ARPA-E's FLExible Carbon Capture and Storage (FLECCS) program's goal of flexible carbon capture.

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Background

UNOTech/8Rivers FLECCS project
This project aims to enhance the profitability and responsiveness of gas turbine generators in highly variable renewable energy environments, by retrofitting plants with Exhaust Gas Recycle and a novel phase-change solvent carbon dioxide capture system, UNO MK3. UNO MK3 offers a lower cost pathway than new gas turbines with carbon dioxide capture. UNO MK3 allows carbon dioxide to be withdrawn and stored as solid potassium bicarbonate during high energy demand, eliminating stripper energy and enabling profitable regeneration.

UNO MK3
UNO MK3 is significantly different from current international practice in carbon capture. It captures 90 per cent of exhaust gas carbon dioxide using a benign inorganic precipitating solvent. This offers an environmentally friendly capture process for all types of industrial emissions, with:

- lower energy usage
- lower overall costs
- removal of additional impurities from emissions
- oxygen tolerance
- superior environmental performance
- products e.g. fertilisers, chemicals, and hydrogen.

The UNO MK3 process is one of a platform of techniques that UNO Technology has developed to drive down the cost of carbon dioxide capture, including processes, novel equipment, and optimal heat integration.

UNO Technology
UNO Technology Pty Ltd (www.unotech.com.au) is a Melbourne-based start-up developing carbon capture technologies. It grew out of the Australian Government Cooperative Research Centre program, under the CO2CRC, and has been operating independently since 2014. The company has developed technologies for over 15 years, and it controls 10 patent families with over 25 awarded international patents and many more pending.

8 Rivers Capital
8 Rivers Capital, LLC (www.8Rivers.com) is a US based firm leading the innovation of sustainable, infrastructure-scale technologies. As the inventor of the Allam-Fetvedt Cycle, 8 Rivers is also developing economic and sustainable production of hydrogen, as well as direct air capture, retrofit carbon capture and uses for the carbon dioxide captured by the cycle, including the production of ethylene and other valuable products and the removal of sulfur impurities from gas streams. 8 Rivers is developing technologies to deliver space launch and backbone communications at a fraction of the cost of existing technologies.