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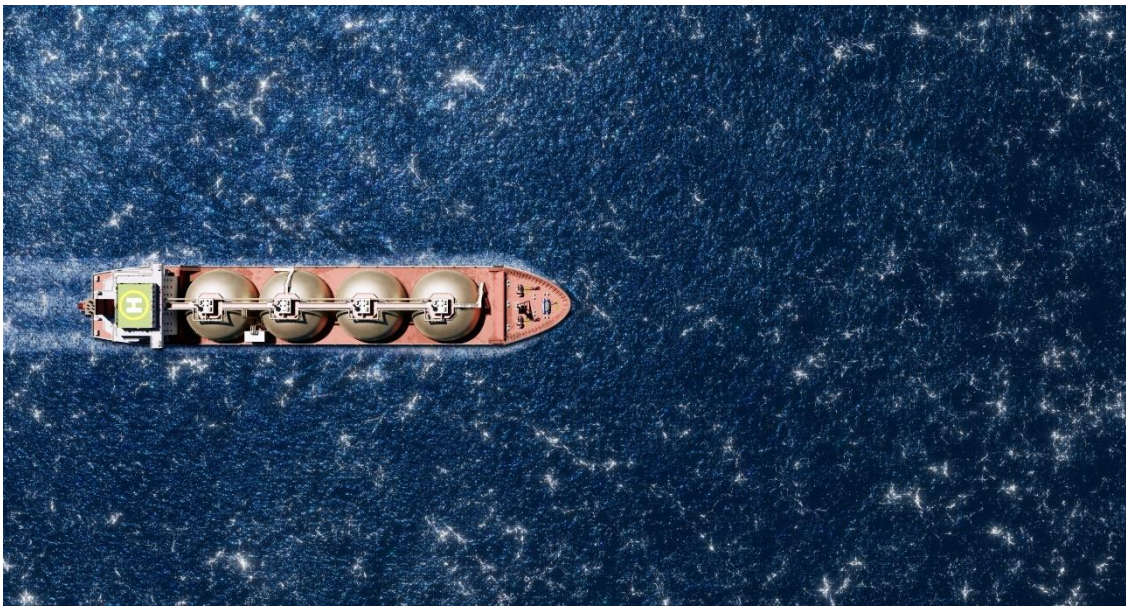
FEnEx CRC News Update

October 2024

Dear Reader

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First phase of FEnEx CRC low pressure liquid CO₂ project is completed

The FEnEx CRC project *Low Pressure, Low Temperature Liquefied CO₂ Transportation Technology for CCUS Demonstrations: Phase 1* was completed this month.

The *Phase 1* project—funded by JX Nippon Oil & Gas Exploration, Low Emissions Technology Australia, Mitsui O.S.K. Lines, and Osaka Gas—began in September 2023 and involved experimental, modelling, and project development work executed by the University of Western Australia, Seoul National University, and deepC Store.

Phase 1 investigated storage and transport of liquid CO₂ at low pressure (LP), which is an emerging option for CCUS projects that will ship CO₂. Transport of CO₂ by ship is a key part of the CCUS supply chain whenever emitters are far from a sequestration or utilisation site.

Current shipping operations hold liquid CO₂ at medium pressure (MP) in the range 15-20 bar. For example, Norway's Northern Lights CCS project uses ships that hold 7,500 m³ of liquid CO₂ at 16 bar and -26°C.

A lower pressure such as 7 bar permits storage tanks with larger diameters to be constructed, giving designers more freedom when sizing and arranging the tanks in the ship's cargo hold. Ships are now being designed to transport more than 30,000 m³ of LP liquid CO₂.

Compared to liquid CO₂ stored at MP conditions, LP liquid CO₂ is closer to the CO₂ triple point, which is the point at which saturated liquid CO₂ freezes. In *Phase 1*, experiments and dynamic models were used to replicate storage and transport operations to determine the risk of LP liquid CO₂ freezing.

In CCUS projects, a wide range of other components may be present in the CO₂-rich mixtures that are stored and transported. In *Phase 1*, experiments and dynamic models showed how some other components (N₂, CH₄, H₂, Ar) affect boil-off gas rates and phase compositions when present in LP liquid CO₂.

For those interested in the findings and recommendations produced in *Phase 1*, a summary report approved for wider release by the funders will be made available upon request.

FEnEx CRC is now preparing to begin *Phase 2* of the project, which aims to scale-up demonstration of LP liquid CO₂ operations. A call for expressions of interest in *Phase 2* will be circulated to FEnEx CRC Participants shortly.

To obtain the *Phase 1* summary report, or to enquire about involvement in *Phase 2*, please contact FEnEx CRC CEO Professor Eric May [admin@fenex.org.au].



Credible framework for measuring natural gas supply chain emissions

The US Department of Energy's Office of Fossil Energy and Carbon Management (FECM) recently announced progress achieved by the international measurement, monitoring, reporting, and verification (MMRV) working group, which includes FEnEx CRC representation.

The MMRV working group has reached two key milestones in its effort to develop and deliver a framework for comparing natural gas supply chain greenhouse gas emissions from different suppliers in the global market, starting in 2025:

- Developed a consensus-based design architecture to guide the current technical development of the various elements of a future MMRV system
- Established multiple technical sub-groups consisting of a diverse mix of international government technical experts to guide the development process

[To read the announcement](#)

FEnEx CRC welcomes Vanessa Sullivan to the Board



We are delighted to welcome [Vanessa \(Fernandes\) Sullivan](#) as an independent director to our Board. Elected by the members at the recent Annual General Meeting, Vanessa brings a wealth of experience to FEnEx CRC as the establishment phase has passed and the CRC has increasingly integrated its research findings into the nation's dialogue around maintaining Australian's energy exports in a rapidly changing environment.

“As our CRC grows in national and international recognition it is timely to have Vanessa join us as a highly regarded and a highly credentialed non-executive director. We are truly fortunate to be able to attract such a talented individual to complement our board” said Mary Hackett, FEnEx CRC Chair.

November Colloquium: Progress and challenges in the electrochemical conversion of CO₂ for decarbonisation of industrial processes



Presented by Dr Thomas Rufford, GETCO2

Potentially, many commercially important chemicals such as formaldehyde, methanol and ethylene can be produced electrochemically from CO₂ and H₂O. Importantly, electrochemical CO₂ conversion can be powered by renewable electricity. Australia's vast potential for low-cost, renewable energy generation, enables the opportunity to create new 'green' technologies and develop new manufacturing industries.

Thomas will be presenting on the progress and challenges that could unlock the economically attractive electrochemical conversion of CO₂ for decarbonisation of industrial processes.

Recent Publications

Our science publications and reports are updated on a monthly basis. Follow the links to see the latest releases:

- [Scientific publications](#)
- [Reports](#)

About FEnEx CRC

The Future Energy Exports Cooperative Research Centre (FEnEx CRC) is an Australian non-for-profit organisation established in 2020 to future-proof energy exports through industrial-scale research and innovation. Australia has a long and very profitable heritage as an energy exporter. Now, our country has the opportunity to harness its world-class renewable energy resources and leverage the know-how, capability, infrastructure and supply chains of its existing LNG industry to cultivate a new, sustainable and competitive export industry and remain a leading provider of energy internationally.