Environment Operations Tankers Tech

Landmark study signposts costs and perks of onboard carbon capture

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A project assessing the technical feasibility of onboard carbon capture and storage (OCCS) in the shipping sector has found that the technology has the potential to help maritime transport significantly reduce its greenhouse gas emissions as well giving owners and charterers an idea of the costs to make that happen.

The engineering project, named Realising Maritime Carbon Capture to Demonstrate the Ability to Lower Emissions or REMARCCABLE for short, analysed the design and cost implications of retrofitting a carbon capture system on the medium-range tanker *Stena Impero*. It found that the technology could reduce the vessel's CO2 emissions by as much as 20% per year, with a fuel consumption penalty of just under 10%.

The project, carried out by the Oil and Gas Climate Initiative (OGCI), the Global Centre for Maritime Decarbonisation (GCMD), and Stena Bulk, found that building and installing the full system on the vessel is estimated at $13.6m, with an abatement cost of avoided CO2 for the first-of-a-kind prototype evaluated at $769 per tonne of CO2.

However, the results of the project, supported by ABS, Alfa Laval, Deltamarin, Lloyd's Register, Seatrium, and TNO, indicate that further research and development will reduce costs, making OCCS increasingly viable for the shipping industry.

The study also looked at incorporating OCCS on newbuild vessels and, according to the results, improvements to capture rate and fuel penalty may be achieved using more efficient engines, heat pumps, and alternative solvents.

"OCCS has gained traction in recent years as a feasible approach to meet the 2023 IMO revised GHG emissions reduction targets. This study provides quantitative insights on managing the trade-offs between the actual cost of operating OCCS and its emissions reduction potential," said Lynn Loo, CEO of GCMD.

On the regulatory front, the industry awaits guidance from IMO's Correspondence Group tasked with developing a framework for OCCS in MEPC 83 while on the operational front, challenges include additional costs due to fuel penalty, amine solvent replenishment, manpower, maintenance, and offloading services.

Offloading captured CO_2 is in its nascency, with a lack of national and port policies for accounting captured CO_2 and its final deposition. There is also a lack of infrastructure at ports to support offloading and storage. According to the report, logistical and policy support for permanent sequestration or utilisation of the offloaded CO_2 will also be necessary to encourage the adoption of OCCS solutions.

#Carbon Capture

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