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Maersk Vessel receives 5,000 Tonnes of bioethanol in Singapore milestone

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Singapore will assess whether its existing methanol bunkering framework can be adapted to support ethanol as the maritime industry explores alternative fuels



Singapore has completed its first ethanol bunkering operation, transferring approximately 5,000 metric tonnes of certified bioethanol to a dual-fuel container vessel in what the participating companies describe as the largest single ethanol bunkering operation conducted globally to date.

The operation was carried out at PSA Singapore's Pasir Panjang Terminal by Maersk, Golden Island and PSA, with support from the Maritime and Port Authority of Singapore (MPA). It marks a step forward in Singapore's efforts to develop the infrastructure, operational procedures and safety standards required to accommodate alternative marine fuels.

The Singapore-registered Maersk Halifax received the bioethanol from the Singapore-registered chemical tanker MT Golden Centaurus, operated by Golden Island. The fuel was certified under the International Sustainability and Carbon Certification (ISCC) system.

A key feature of the operation was the simultaneous execution of bunkering and container-handling activities. The transfer was conducted alongside ongoing cargo operations, using a mass flow meter to measure the quantity of fuel delivered. The approach provided an opportunity to test how alternative-fuel bunkering could be integrated into port operations without requiring cargo handling to stop.

The exercise also generated operational data that could inform the development of technical requirements for ethanol bunkering. Singapore will assess whether its existing Technical Reference 129 (TR 129), which provides a framework for methanol bunkering, can be adapted to accommodate ethanol.

For the MPA, the operation offers an opportunity to build on the country's experience with methanol while evaluating another potential marine fuel. MPA Chief Executive Ang Wee Keong said the findings would help inform the standards and procedures

needed to support safe and efficient ethanol bunkering as Singapore prepares for a multi-fuel shipping environment.

Maersk's participation reflects the shipping company's broader approach to maritime decarbonisation. Emma Mazhari, the company's head of energy markets, said the energy transition requires the exploration and scaling of solutions capable of delivering practical results. She noted that Maersk's multi-fuel strategy recognises that no single fuel pathway can independently decarbonise global shipping.

For Golden Island, the operation builds on experience gained from methanol bunkering. Managing Director Johnny Tan highlighted the simultaneous execution of fuel transfer and cargo operations, as well as the use of mass flow metering, as important elements of the exercise.

The milestone comes as the maritime industry explores alternatives to conventional marine fuels to reduce greenhouse gas emissions. Bioethanol could become one option in a more diversified marine energy mix, although its broader adoption will depend on fuel availability, lifecycle emissions performance, vessel compatibility, cost and the development of consistent safety and operational standards.

Singapore's latest operation does not, by itself, establish ethanol as a commercially mature solution for shipping. It does, however, provide a practical test case for the port's ability to handle another alternative fuel at scale and under live operating conditions.

The next challenge will be to translate the experience into repeatable procedures and technical standards that can support wider deployment. For Singapore, a major international bunkering and shipping hub, the ability to accommodate multiple fuels could become an important part of its strategy to remain competitive as the maritime sector moves towards lower-emission operations.