

Propelling Maritime Decarbonisation with TR 140

Perspectives from Stakeholders

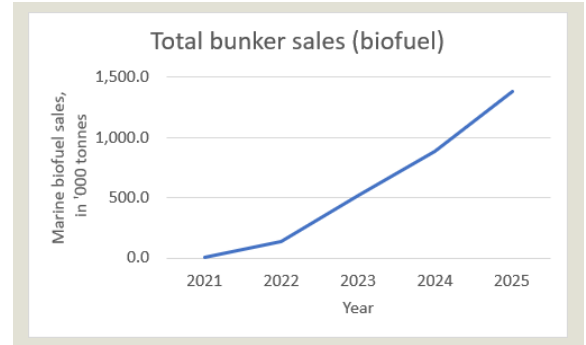


Background of TR140

Singapore is the top maritime centre and the world's largest bunkering hub, achieving a record of 56.77 million tonnes in 2025. To support maritime decarbonisation and establish Singapore as a multi-fuel bunkering hub, there has been a strong shift towards low-carbon alternative fuels, which saw sales tripled to 1.95 million, with biofuel blends increasing by 55.6% (1.36 million tonnes) in 2025. Marine biofuel is a practical low-carbon fuel option for marine transport as they are "drop-in" fuels compatible with existing ship engines and infrastructure.

TR 140:2025 – Specification for marine biofuel aims to assist bunker suppliers and buyers in ascertaining that marine biofuel is acceptable for use and is appropriately stored and handled by the receiving vessel and the bunker craft operator. It is a Technical Reference covering the quality for marine biofuel, the corresponding test methods, and the specifications for each parameter. It complements the existing international marine fuel quality standard ISO 8217:2024 while including a wider range of bio-feedstock.

TR 140:2025 is a revision of Workshop Agreement, WA 2:2022 Specification for marine biofuel.



Data from: <https://www.mpa.gov.sg/who-we-are/newsroom-resources/research-and-statistics>

Quick list of benefits

TR 140:2025 – Specification for marine biofuel

- Ensure the quality of marine biofuel by applying globally recognised test methods
- Provide guidance on the use of marine biofuel, e.g. storage handling, fuel consumption, engine performance, maintenance, and operation
- Support regulatory compliance with the use of marine biofuels, and by lowering carbon intensity and minimising contamination
- Reduce environmental impact and strengthen sustainability

Perspectives from stakeholders

Featured here are six stakeholders across the marine biofuel value chain who have adopted TR 140. They include a port regulator, a biofuel manufacturer, a biofuel supplier, two biofuel end-users, and a non-profit organisation driving maritime decarbonisation efforts in Singapore. Each shares how they use TR 140 and the benefits it brings.

Stakeholder 1: Port Regulator

Maritime and Port Authority of Singapore (MPA)



Singapore continues to develop as a multi-fuel bunkering hub. Photo credit: MPA

“TR 140 provides clear and consistent requirements for the use of marine biofuels in Singapore”

MPA develops and promotes Singapore as a global hub port and international maritime centre, while safeguarding Singapore's maritime interests. MPA, the Singapore Standards Council, relevant agencies, and industry stakeholders collaboratively developed TR 140 as part of efforts to facilitate the maritime sector's transition towards a multi-fuel future.

Mr Chua Yeng Hian, Director (Marine Services), MPA, says: “TR 140 provides clear and consistent requirements for the use of marine biofuels in Singapore. By defining product specifications and adopting internationally recognised test methods, the standard strengthens assurance on fuel quality and compatibility with existing bunkering systems, while creating a clearer framework that supports continued research, innovation, and adoption of biofuels.”

He adds, “Since its introduction, TR 140 has also provided a clear reference to reduce uncertainty in testing and supports the safe commercial adoption of biofuels. MPA's support for this standard reflects our broader commitment to strengthening Singapore's position as a reliable and sustainable global bunkering hub.”

Stakeholder 2: Biofuel Manufacturer

Alpha Biofuels



TR 140 benefits Alpha Biofuels by enhancing customer confidence in the quality and handling of its biofuels during delivery. Photo credit: Alpha Biofuels

“TR 140's acceptance of waste-origin feedstocks enabled Alpha Biofuels to innovate new offerings and gain access to new market segments”

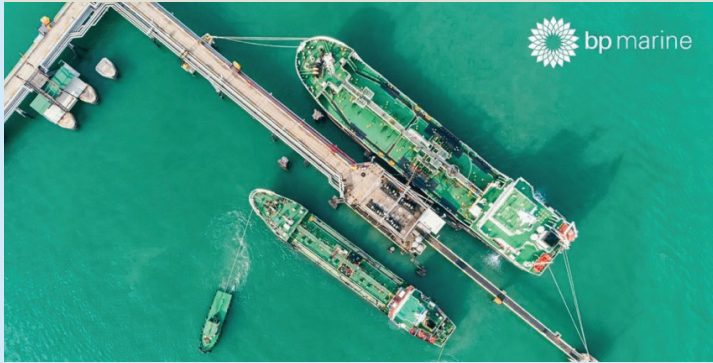
Founded in 2007, Alpha Biofuels is a Singapore-based pioneer in circular-economy biofuel production. It specialises in transforming waste-origin feedstocks into high-quality biodiesel and marine biofuel blends. Alpha Biofuels manufactures, formulates, and blends sustainable fuels for major shipping lines, harbour craft operators, industrial users, and multinational corporations.

Before TR 140, Alpha Biofuels managed a wide range of client-specific quality requirements for marine biofuel adoption. With TR 140, it streamlined quality assurance by setting a common benchmark for marine biofuel applications. Quality checks, laboratory testing, sampling methods, and reporting formats were standardised, reducing operational ambiguity and downtime from uncertainty while strengthening trust with vessel operators, traders, and downstream customers. With improved quality control, Alpha Biofuels has reduced the risk of batch rejection, avoiding an estimated S\$350,000 a year in potential losses.

Allan Lim, Founder and Managing Director, Alpha Biofuels, says: “Training programmes are now also aligned with TR 140's recommended practices, resulting in greater technical confidence and fewer operational errors. In addition, TR 140's acceptance of waste-origin feedstocks enabled Alpha Biofuels to innovate new fuel offerings and gain access to new market segments.”

Stakeholder 3: Biofuel Supplier

bp



Replenished marine bunker vessel departing supply terminal. Photo credit: bp Marine

“TR 140 supports bp’s approach to clear quality assurance, operational consistency, and transparency across our marine fuel supply chain”

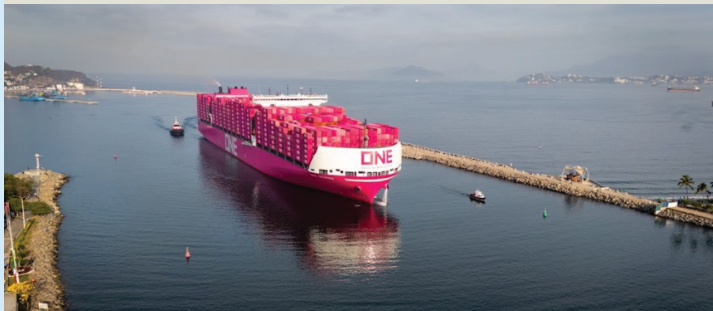
bp is an established global supplier of marine fuels, supported by an extensive port network and integrated trading, logistics, and quality management systems. bp Marine is a top supplier of marine fuels in Singapore, with products delivered in line with ISO8217 and backed by routine testing and dedicated technical support. bp also supplies lower carbon options, including biofuel blends, as part of its wider marine energy transition offer.

On TR 140, Nic Robbins, Regional Marine Manager (Asia and Middle East), bp, says, “It provides a relevant technical reference for drop-in and near drop-in marine biofuels. It also broadens the scope of acceptable bio-origin feedstocks and complements ISO8217, giving bp a consistent basis for fuel specification, testing, and interpretation within our supply processes.”

He adds, “Applied alongside established fuel standards, TR140 supports bp’s approach to clear quality assurance, operational consistency, and transparency across our marine fuel supply chain.”

Stakeholder 5: Biofuel End-user

Ocean Network Express (ONE)



The container vessel ONE Sphere. The use of biofuels will help ONE reduce carbon dioxide emissions by 50% by 2050, compared with its 2018 baseline. Photo credit: ONE

“TR 140 has been instrumental in helping ONE make the transition to marine biofuel adoption with greater confidence”

ONE, headquartered in Singapore, is one of the world’s leading liner shipping companies. It operates a fleet of over 260 vessels with a capacity exceeding 2 million TEUs. Through its extensive global network, ONE provides reliable container shipping services to over 120 countries.

ONE is committed to advancing sustainable shipping, and TR 140 has played a key role in supporting this transition. The TR 140 guidelines offer ONE the standardisation needed to manage biofuel use safely and efficiently across its operated fleet, ensure consistent fuel quality, and align its sustainable fuel management with global best practices. ONE has applied TR 140 across all its marine biofuel supplies.

Tan Wei Teck, Bunker Purchaser, ONE, explains: “Marine biofuel adoption is growing, and TR 140 has been instrumental in helping ONE make this transition with greater confidence. The clear specifications allow us and our partners to operate with a shared understanding as we navigate the early stages of biofuel adoption, and provide assurance to everyone — from shipowners to technical teams — for safe and consistent biofuel operations.”

Stakeholder 4: Biofuel End-user

NYK Shipmanagement (NYKSM)



The vessel Sara Leader. TR 140 provides NYKSM with assurance on the quality of biofuels from diverse origins. Photo caption and credit: NYKSM

“TR 140 has helped NYKSM to be better prepared for the extensive use of biofuels from diverse origins”

NYKSM, headquartered in Singapore, is a fully owned subsidiary of Japan’s NYK Line. NYKSM is among the largest ship managers in Singapore and provides ship management services to ships owned by NYK Line as well as other shipowners, and is currently managing 141 vessels. Over the years, there has been increased use of biofuels bunkered at the Port of Singapore across NYKSM’s fleet.

Anubhav Garg, Managing Director & COO, NYKSM, says, “With the increasing use of biofuels on ships, it also means that biofuels from more diverse origins will be supplied. Having a technical reference like TR 140, which complements ISO 8217, helps to eliminate concerns about the quality of such biofuels. In other words, TR 140 has helped NYKSM to be better prepared for the extensive use of biofuels from diverse origins. The clear guidelines on quality control, as well as storage and handling, are very useful to ship engineers and managers.”

He concludes that TR 140, in general, is of immense help to end-users of biofuels, as it sets a consistent framework for the quality and safety of biofuel use.

Stakeholder 6: Decarbonisation Non-Profit Organisation

Global Centre for Maritime Decarbonisation (GCMD)



GCMD team members onboard a vessel to conduct a regular ship engine visit. Photo credit: GCMD

“TR 140 goes a step further [than ISO 8217] by adding parameters and test methods specific to marine biofuels”

GCMD was established as a non-profit organisation with a mission to help the maritime sector decarbonise. It was founded with the support of industry partners, alongside funding from MPA for qualifying research and development programmes. GCMD was a contributor to the development of TR 140 and presently, a user of the guidelines in its pilot projects. Dr Prapaisala Thepsithar, Director, Projects, GCMD, says, “TR 140 is a timely and practical framework that will bolster confidence in marine biofuel deployment.”

As a user, TR 140 will guide GCMD’s upcoming trials, including those involving Cashew Nut Shell Liquid (CNSL). As an agricultural waste-derived feedstock, CNSL represents a promising pathway to increase the availability of liquid biofuels, while offering very low greenhouse gas intensity and competitive pricing relative to Very Low Sulphur Fuel Oil (VLSFO).

Dr Thepsithar adds that, apart from providing a baseline for marine biofuel quality that complements ISO 8217, TR 140 goes a step further by adding parameters and test methods specific to marine biofuels. Its testing guidance also gives GCMD a practical and consistent framework to design and run marine biofuel trials, ensuring that key operational parameters are tested as new biofuel types emerge.