

## ExxonMobil Bio Marine Fuel Oil

### Background

- Responding to the marine industry challenge: alternative fuels for marine industry that are safe, scalable, reliable, viable energy
- Completed successful sea trial of ExxonMobil's first bio-based marine fuel, with Stena Bulk in Rotterdam
- The marine bio fuel oil is a 0.50% sulphur residual-based fuel (VLSFO) processed with a second generation waste-based FAME (Fatty Acid Methyl Ester) component (ISCC certified)
- Can provide up to ~40% CO<sub>2</sub> emissions reduction compared to conventional marine fuels
- Requires no equipment modification (“drop-in”)
- Fuel will be available in select European ports

### Product Overview

- Sea Trial conducted with 49% FAME component (mainly used cooking oil). Proved suitability and performance/handling of product
  - No operational issues
  - No physical modifications required
  - No storage/handling issues
- ExxonMobil commercial Bio Marine Fuel Oil offer is BMF.5™
  - FAME content min 45 vol%
  - Provides potential 34%\* CO<sub>2</sub> savings vs. conventional marine fuel (HFO/VLSFO)
  - Meets or exceeds the characteristics and limits for the RMG 380 grade found in ISO 8217 : 2017 Table 2
  - Has undergone ExxonMobil’s extensive and rigorous testing process
  - Has good solvency power\*\*
- Emission reduction illustration
  - Use of new bio marine fuel oil would save 3,478 T CO<sub>2</sub> during a one-way voyage Rotterdam to Singapore on a 15,000 TEU container ship, compared to conventional petroleum-based HFO/VLSFO
  - Equivalent of eliminating the CO<sub>2</sub> emitted when sailing from Rotterdam to Athens

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\*Benefit is up to 34 percent compared with conventional petroleum-based HFO/VLSFO, calculated on an energy basis. Well-to-wake GHG emissions reduction calculated using the equation as published in the Directive 2009/30/EC of the European Parliament and of the Council Annex IV A and EN 16258. Actual data is sourced from ExxonMobil purchases of Annex IX part A feedstock in Europe in 2020

\*\*solvency power as determined by ASTM D7157 test method. It is a measure of the intrinsic stability of fuels containing asphaltenes

