

Wind technologies for cleaner shipping

Modern wind technologies (rotors, suction wings, sails, kites etc.) can provide a large part of the power needs for new and existing cargo and passenger ships, reducing fuel consumption and the connected emissions significantly. However, market and non-market barriers (lack of information, conservative industry, business structure, focus on short term profit etc.) are blocking the uptake of wind technologies. These barriers can be overcome by flag and technology neutral regulations at IMO, EU, national and/or at regional level. The EU Interreg program for the North Sea Region has funded this policy brief as a part of the WASP-project: Wind Assisted Ship Propulsion.

Modern wind technologies: Rotors, suction wings, sails, kites etc. can provide a large part of the power

Key climate and environmental challenges for shipping

1. Projected increase in CO₂-emissions conflicts with all UN climate goals.
2. Heavy air pollution contributes significantly to morbidity and mortality.
3. Clean fuels increase fuel cost 3-4 times, which will keep ships fossil fuelled.

Shipping will continue to pollute significantly without regulatory intervention

Wind technologies reduce marine fuel use significantly

1. Reducing CO₂-emissions and air pollution from the existing and future fleet.
2. Reducing the price gap between fossil fuelled ships and zero emission shipping.
3. Reducing the investments and time needed for full decarbonization of shipping.

Wind technologies consolidate shipping as the green logistic driver of globalization

Regulation to promote wind technologies and other CO₂ savings

1. Introduce a significant carbon levy, which is being raised substantially yearly.
2. Introduce a CO₂ dependent speed limit or engine power limit at sea.
3. CO₂ reduction aligned with the 1.5°C goal of the Paris Agreement.
4. More public Research & Development funds for “non-fuel” propulsion technologies.
5. New 1.5°C compatible EEDI targets for 2025/30 and beyond.
6. Include shipping in a flag neutral emission trading system.
7. Stricter regulation for ship emissions to air and water.
8. New port fees based upon emitted CO₂, NO_x, SO₂ and particles.
9. Stop public support for fossil fuels and fossil fuel infrastructure.
10. Include life-cycle assessments when assigning CO₂ savings.

Revenue from the new carbon levies and fees should be invested in cleaner shipping

Wind technologies

Existing wind technologies offer free non-polluting energy delivered directly to the ship on sea without investments in fuel infrastructure. Wind as 'green propulsion' is more efficient than any 'green fuel'.

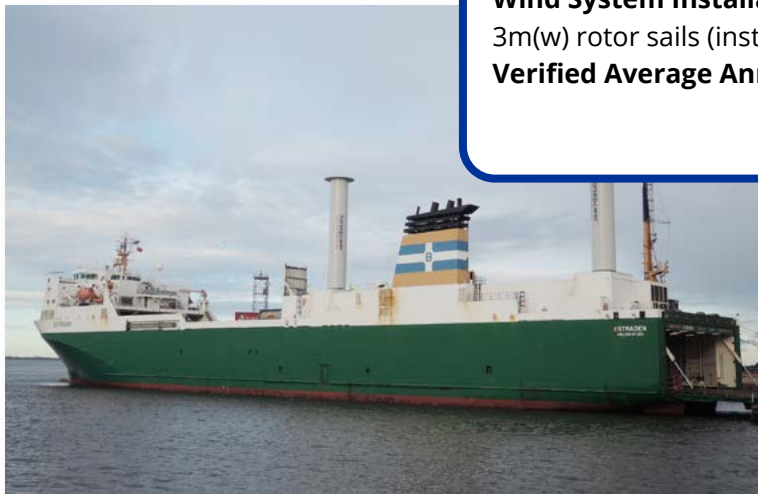
Fuel savings from wind technologies retrofitted onto existing ships vary from 5-25% depending on ship size, type and speed, route and weather conditions etc., as well as type, size and number of wind technologies applied. For new ships where wind technologies are further developed and fully integrated and the ships are designed to use wind propulsion, fuel savings well above 30% are to be expected.

Three illustrative installations

Ship name: Maersk Pelican
Type: LR2 Product Tanker
Vessel Data: LOA 245m, 109,647DWT
Wind System Installation: 2 x 30m(h) x 5m(w) rotor sails (installed 2018)
Verified Average Annual Fuel Savings: 8.2%



Ship name: Estraden
Type: Ro-Ro Cargo
Vessel Data: LOA 162.7m, 9,700DWT
Wind System Installation: 2 x 18m(h) x 3m(w) rotor sails (installed 2015-16)
Verified Average Annual Fuel Savings: 6.1%



Note: 3rd party verified, retrofit installations, comparison is done on the same operational profile and averaged across the year.

Ship name: Viking Grace
Type: Cruise Ferry
Vessel Data: LOA 218m, 57,565 GT
Wind System Installation: 1 x 24m(h) x 4m(w) rotor sail (installed 2018)
Verified Average Annual Fuel Savings: 231-315 tons of LNG per year



Further information

IMO MEPC75 Document: 'Wind Propulsion Solutions' MEPC75 Inf.26, Submitted by Comoros [Read more...](#)

EU commissioned 'Study on the analysis of market potentials and market barriers for wind propulsion technologies for ships'. Headline findings: '*...market potential for bulk carriers, tankers and container vessels is estimated at 3,700-10,700 installed systems until 2030 ... leading to CO₂ savings of around 3.5-7.5 Mt CO₂ in 2030 ... and good for around 6,500-8,000 direct and around 8,500-10,000 indirect jobs.*' [Read more...](#)

International Windship Association: Member driven not-for-profit organisation dedicated to the facilitation and promotion of wind propulsion for commercial shipping worldwide. The association has over 130 members, associates and registered supporters including wind propulsion technology providers, shipping companies, shipbuilders, class, research organisations and academia. [Read more...](#)

Facts about the WASP project

EU project type: Interreg North Sea Europe programme (part of the ERDF)

Project acronym: WASP (Wind Assisted Ship Propulsion)

Project full title: Run Wind Propulsion Technology real life trials on sea going ships in operation > showcase proven concepts > market adoption > green sea transport

Project No. 38-2-6-19

Coordinator: Netherlands Maritime Technology Foundation

Homepage: www.northsearegion.eu/wasp