

IJGlobal ESG Corporate Transition – Infrastructure – Scandlines

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Innovations in the shipping sector win Scandlines the IJGlobal ESG Corporate Transition Award in the Infrastructure category having, in the words of one judge, taken “a leadership role in industry”.

The independent panel of judges was particularly impressed by Scandlines’ construction of the first zero emissions ferry with one saying they “look forward to seeing it scale” as well as being wowed by its custom-made rotor sails that significantly reduce emissions.

One judge said: “A 25% reduction in emissions versus 2018 target for this sector is impressive. Further, the largest electric battery powered ship investment can be used to show the industry what can be achieved. Scandlines has clearly demonstrated through carbon reduction and innovation in all of their projects.”

Scandlines is the sole operator of the Rodby-Puttgarden (RoPu) and Gedser-Rostock (GeRo) ferry routes, connecting Denmark and Germany. It has harboured a vision since 2011 to have zero emissions ferry operations, deploying more than €300 million of green investments and technological advances to date, and positioning Scandlines as a pioneer in green ferry operations.

By the end of 2021, Scandlines had reduced its direct emissions by almost 25% compared to 2018.

This was achieved through ground-breaking investments in technologies such as hybrid-engine systems, which combine diesel and electric battery power and reduce ferry emissions by up to 15%.

Scandlines has also installed pull thrusters and custom-made Norsepower rotor sails, which are described further below, and which make Scandlines’ vessels such as M/V Copenhagen among the most energy-efficient ferries in the world.

In 2021, Scandlines started construction on its first zero direct emissions ferry, capable of maintaining normal service while operating entirely on battery power. This will replace a 40-year-old vessel and is 7x more energy efficient per freight unit, leading to significant savings in opex as well as capex and potential future carbon taxes. The vessel is expected to be commissioned on the RoPu route in 2024.

The vessel will be dedicated to freight transport and will be 147 metres long with the capacity to carry 140 passengers and 66 freight units. It will be able to make the return crossing in 3 hours with no direct emissions, or in 2 hours using a hybrid system.

It is expected to save almost 15,500 tonnes of CO2 per year with the hybrid system, equivalent to 12% of Scandlines’ Scope 1 emissions in 2021. Savings of more than 21,000 tonnes of CO2 per year could be achieved with the direct emissions-free system.

The vessel has the largest battery of any electric ship today (10MWh) and will make use of the charging facilities Scandlines is developing in Rødby, where the company has installed a 50kV/25MW power cable.

Scandlines is investing in an extension of the cable to the ferry berth where a transformer and charging station will be installed. All of the electricity used to charge the ferry will come from renewable sources.

In future, Scandlines also plans to develop charging capability at the other end of the route in Puttgarden.

In addition to having the ability to operate with no direct emissions, the new ferry will increase capacity for Scandlines by 23%, helping to meet growing demand for freight transport.

In March 2022 Scandlines became the most improved company in Denmark on the Sustainable Brand Index – Europe’s largest independent brand study focused on sustainability. It moved up 93 places on the index in 1 year and became the top-ranking shipping business in the country.

Sail of the century

A custom-made Norsepower rotor sail was installed on Scandlines’ vessel M/V Berlin in 2021-22. The 42-tonne, 30-metre-high rotor sail harnesses wind power to provide supplementary propulsion for the ship while reducing emissions by around 4% on average and by more than 20% in optimal wind conditions.

Scandlines first installed a rotor sail on M/V Copenhagen in 2020. The installation was undertaken as part of the EU co-financed Wind Assisted Ship Propulsion (WASP) project launched in late 2019.

Based on positive results from this, the company prepared sister vessel M/V Berlin for a similar installation in 2021 which was finally completed and operational in May 2022.

The rotor sail is based on a rekindling of the almost 100-year old Flettner rotor technology. The 30-metre rotating cylinder uses the Magnus effect to contribute to pushing the ship forward while reducing use of its diesel motors.

When the wind meets the spinning cylinder, the airflow accelerates on one side of the cylinder and decelerates on the opposite side of the cylinder. The change in the speed of airflow results in a pressure difference, which creates a lift force that pushes the ship forward perpendicularly to the wind flow direction.

A rotor sail has the optimum effect when it is windy and the wind comes from the side. The route between Gedser to the north and Rostock to the south is almost perpendicular to the prevailing wind from the west or the east – providing favourable conditions for using rotor sails on the crossing.

The installation of the rotor sails is now complete on both vessels. In order to verify the efficiency gains, Scandlines performed a successful speed test together with project partner SSPA, which confirmed the good performance of the rotor sail on M/V Copenhagen.

Picture added after IJGlobal ESG Awards 2022. The Scandlines team with IJGlobal editor Ila Patel and editorial director Angus Leslie Melville.





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