OCEANBIRD

The wind carries a shipping revolution

Sustaintech in focus – a Swedish project for sustainable shipping

Reduction in emissions
90%

The first vessel will be delivered at the end of
2024

The vessel will be able to carry
7,000 cars

Height above water line
105 metres

A transatlantic crossing will take around **12** days (today's crossings takes about 8 days)

Estimated average speed: **10** knots

With current design, the vessel is **200** metres long, and **40** metres wide

Aiming for a possible launch in 2024

- Sea trials for the 7-metre-long model in autumn 2020
- Design will be ready to order at the end of 2021

Terms and concepts

- Primary energy source: wind
- Sustaintech concept for truly sustainable shipping
- Sailing cargo vessel
- A unique combination of rigging and hull
- Worldleading Swedish competence cluster

The collaboration – an efficient Swedish cluster

Oceanbird is a Swedish collaborative project between Wallenius Marine, KTH and SSPA. It is supported by the Swedish Transport Administration, which is acting as a co-financier. It is an cluster collaboration with experts from the public and private sectors and academia. Wallenius Marine, which is the project coordinator, owns the concept and is also contributing design and logistics expertise. KTH is addressing the challenges within areas such as aerodynamics, sailing mechanics and performance analysis. SSPA is contributing with expertise within the development and validation of new testing methods, aerodynamic and hydrodynamic simulation methods and risk simulation.

This expertise will eventually be used to develop sailing vessels in other vessel segments.

Oceanbird is a flagship project for Swedish maritime research. The project proves that cooperation between industry and academia can lead to significant innovations in our high-tech society. Together, we are not just developing the transportation technology of the future, but also the next generation of engineers. Working together, we enable sustainable growth.

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WHY – a paradigm shift for shipping

People have been sailing for thousands of years. A hundred years ago vessels powered by engines took over shipping and today shipping accounts for 90% of global freight. Diesel engines have meant faster crossings but at the expense of the environment. With Oceanbird we are developing the ocean-going freighters of the future – with 80 metre high sails.

Oceanbird reduces emissions by as much as 90%. The goal is to be able to operate freighters with zero emissions. A transatlantic crossing with Oceanbird will take around twelve days, compared with the eight days it takes conventional vessels.

Oceanbird shows that the maritime industry can bring about major change and that zero-emission shipping is possible, using wind as the main energy source.

HOW – a unique combination of rigging and hull

Oceanbird is a technically challenging project where the rigging and hull work together as a single unit to harness the wind in the most efficient way possible. The hull has been designed for a large sailing cargo vessel and everything has been developed from this; speed, steering technology, hull shape and appearance, and the design and construction of the rigging. It is a mix of aerodynamic and shipbuilding technology. We can evaluate performance and safety using a combination of computer simulations and physical experiments. When the first ship is completed, it will be the world's largest sailing vessel.

The Oceanbird concept is being developed for really large vessels designed to transport large, heavy cargoes over long distances for long periods. The wing sails are made of a mixture of metal and composite and will be around 80 metres high, twice the height of those on the largest sailing vessels around today. It will be possible to 'reef' the wing sails, reducing their height with approx. 60 metres. The hight above water line with the wing sails down will be 45 metres. The vessels will also be fitted with engines to enable them to manoeuvre in and out of port, and for emergency operation.

The concept enables us to change current working methods and time requirements and to drastically reduce CO2 in the world's transport chains.

Wallenius Marine – the initiator

Wallenius was founded in 1934 and has been working to reduce the environmental impact of all the vessels that the company designs, builds and operates since the mid-90s. It has so far designed and built around 70 vessels with a strong focus on sustainability, reflecting increasingly stringent sustainability requirements. As a pioneer in shipping, it was an early adopter of a zero-emissions target for vessels.

SSPA is an independent Swedish research institute, with a long history of research, development and innovation projects serving the maritime sector. The areas of expertise includes hydro and aerodynamic verification, safety, logistics and sustainability. SSPA supply maritime solutions for shipowners, ports, shipyards, manufacturers and maritime authorities worldwide. The company is fully owned by the Chalmers University of Technology Foundation.

Royal Institute of Technology in Stockholm has since its founding in 1827 grown to become one of Europe's leading technical and engineering universities. KTH is Sweden's largest technical research and learning institu¬tion. Naval architecture is one of the oldest fields of research at KTH. Modern specialization within the field incorporates wind propulsion and maritime robotics.

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