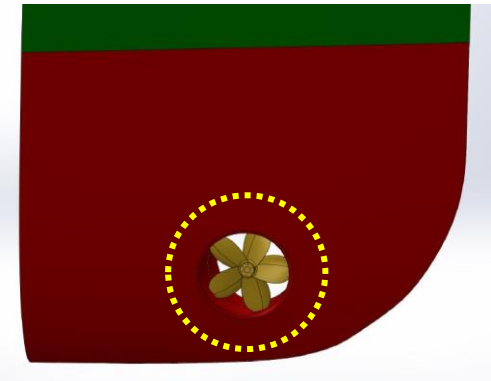
The ECO-Line Thruster: A simple and robust solution to reduce fuel consumption

By removing the sailing resistance of traditional bow thruster tunnels Dec 24

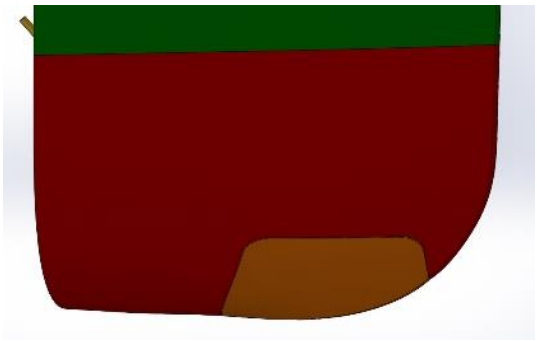
Worldwide, tens of thousands of ships sail around with considerable fuel consumption and harmful emissions. A large proportion of these ships are equipped with a bow thruster, a transverse tunnel in the hull to manoeuvre the ship in the harbor.



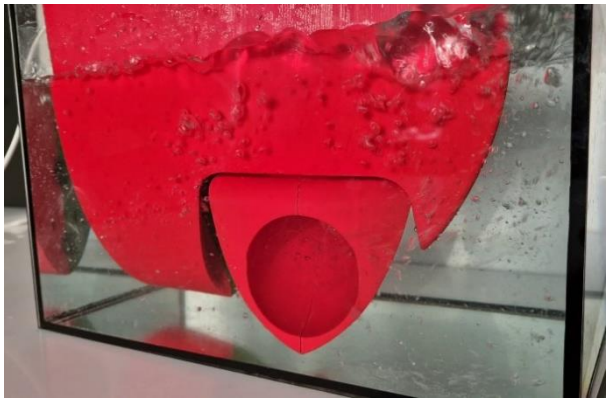
However, a major disadvantage of this tunnel(s) is an ***ongoing additional resistance of 1-4% during sailing***, depending on the ship type and sailing speed. Because of this small value, it has not yet received serious attention in shipping industry. However, due to the widespread application, it has a huge potential in the current 'green' season.

The eco-line thruster replaces the current bow thruster: During normal sailing, the hull is smooth, no openings are visible and there is no extra resistance. Only during temporarily manoeuvring in port, the thruster nozzle rotates outward and delivers the desired thrust. After use, the nozzle rotates inwards again and a smooth hull is restored without additional resistance.

The smooth outside design guarantees no additional sailing resistance.



When turning outwards, not only the outflow but also the intake opening is visible. An internal pump screw pushes the water around through a circular channel and results in a robust and reliable system.



Above picture shows a functional scale model with nozzle rotated outward providing sideward thrust.

The design needs to be further detailed for specific ship types in order to determine the initial purchasing and installation cost.

The flow design has similarities with steering grid thruster, but the eco-line thruster has improved inlet and outlet efficiency, thereby offering a slightly higher efficiency (9-10 kg/kW). Based on current energy prices, a payback period within 7 years is expected. A shorter period is expected considering the growing ETS and FuelEU penalties in the coming years. Further the nozzle can also rotate in reverse condition, thereby offering emergency propulsion.

For the ELT design patent has been applied and we are looking for partners who want to play a role in the further development and / or application.

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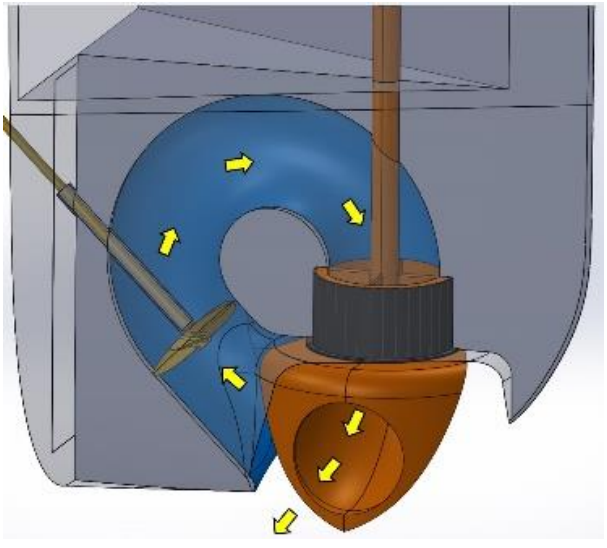

Side view of smooth bow with eco-line thruster

Side view of transparent bow with ELT