

# Combination of three propulsion technologies brings maritime fuel savings

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According to the TRIPOD research project coordinated by VTT Technical Research Centre of Finland lower fuel consumption and emissions are expected for an innovative propulsion system to be used as a promising alternative to conventional propellers. Annual fuel savings for a single cargo ship above half million euros are foreseen. The research examined the benefits derived from combining the RudderPod propulsion units developed by ABB-Finland with the contracted loaded tip propellers (CLT) developed by the Spanish company Sistemar and with contra-rotating propellers (CRP).

Based on the TRIPOD project results, the [fuel consumption](#) of a retrofitted [propulsion system](#) is 5% lower, and that of a newly built system 10% lower, than conventional solutions. Equivalent annual [fuel savings](#) for a single large container ship would be 0.5 to one million euros.

The goal of the TRIPOD project was to improve propeller efficiency by integrating three separate [propulsion](#) technologies – the RudderPod units, CLT [propellers](#) and the CRP propulsion–, already known for their high efficiency over conventional propulsion into a single system.

The electric RudderPod unit can be positioned more freely at the ship stern, independently of the location of the main engine. In TRIPOD, the units are located behind the main propeller working as the aft-propeller of a CRP unit. The rotational speed of the Rudderpod propeller can also be adjusted, improving the propeller's efficiency and attenuating

propeller-induced noise and vibration.

The CLT propeller blades can be more loaded at the tip than those of conventional propellers, which results in an improvement of the propulsion efficiency.

In the CRP system, the contra-rotating aft propeller recovers rotational energy losses from the fore (main) propeller, thus improves overall efficiency.

Study of the viability of the new propulsion solutions is made also by performing economical cost benefit analysis for the operation of the reference ships. It was concluded that if the investment level can be brought down, obviously in close cooperation with the relevant specialist suppliers, ship-owners will be interested to explore further installation opportunities especially in new-building projects of large container ships.

Provided by VTT Technical Research Centre of Finland

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