

WATER VEHICLE PROPELLER

Description:

More than 90% of world trade is transported by ships. The most widely used aquatic thrusters are those based on propeller turboprops. However, one of the biggest problems with this type of thrusters is the appearance of cavitation. For this reason, the implementation of a different alternative for a more efficient aquatic propulsion than the current devices is proposed, and that of course overcomes the main drawbacks of the aforementioned propellers. The present invention is based on flaps. The fins are elastically supported by longitudinal and torsional springs and actuated by an oscillating motor torque. Selecting appropriately the springs' resonant constants for a given torque frequency, a huge amplification of the fins' oscillations amplitude is generated, and therefore, an enhancement of the propulsion performance of the oscillating fins, which would not be possible without that resonance for the same power and torque of the driving motor.

Keywords:

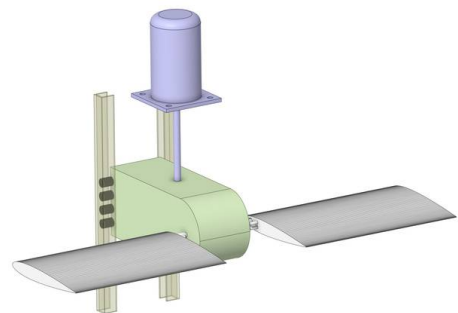
[Structural Resonance](#), [Fluid-Structure Interaction](#), [Aquatic Propeller](#), [Flapping Fins](#)

Sectors:

[Fisheries, Agriculture and Marine Resources](#), [Transport, Tourism](#), [Culture and Education](#)

Areas:

[Hardware / Devices / Components](#), [Marine and Aquaculture](#)



Advantages:

The proposed invention achieves higher propulsive efficiency than other propellers for a given driving motor power, which has a huge relevance because more than 90% of the world commerce is transported by ships, generating the greatest part of the CO2 emissions by human action. Therefore, just a slight increase in the propulsive efficiency would generate huge economic and environmental benefits, reducing the emissions that contribute to the global warming. On the other hand, the flapping fins propellers do not have the cavitation problem of the screw propellers, which reduce efficiency and generate noise.

Uses and Applications:

The invention falls within the field of marine transport and underwater exploration.

Patent Number: ES2973879B2

Applicants: Universidad De Málaga

Inventors: Ramon Fernandez Fera, Enrique Sanmiguel Rojas, Pablo Esteban López

Filing Date: 04/11/2022

Protection Level: Worldwide (PCT countries)

Processing Status: Spanish patent and worldwide (PCT countries) protection application