

SUPERCAVITATING PROPELLER

The supercavitating propeller is a variant of a propeller for propulsion in water, where cavitation (formation of water vapour) is actively employed to gain increased speed by reduced friction.

How operates

The supercavitating propeller operates in the conventional submerged mode, with the entire diameter of the blade below the water line. The blades of a supercavitating propeller are wedge shaped to force cavitation at the leading edge and avoid water skin friction [[1]] along the whole forward face. The cavity collapses well behind the blade, which is the reason the supercavitation principle avoids the erosion [[2]] damage due to cavitation that is a problem with conventional propellers.

Uses

The supercavitating propeller is being used for military purposes and for high performance boat racing [[3]] vessels as well as model boat racing [[4]].

Alternative to supercavitating propeller

An alternative to the supercavitating propeller is the surface piercing, or ventilated propeller. These propellers are designed to intentionally cleave the water and entrain atmospheric air to fill the void, which means that the resulting gas layer surrounding the propeller blade consists of air instead of water vapour.

Advantages

Less energy is thus used, and the surface piercing propeller generally enjoys lower drag than the supercavitating principle. The surface piercing propeller also has wedge shaped blades, and propellers may be designed that can operate in both supercavitating and surface piercing mode.

Source: http://engineering.wikia.com/wiki/Supercavitating_propeller