

Supercavitation Capabilities On a Submarine

Submarines have shaped the way wars have been fought and have been influential in our understanding of fluid dynamics. In the past, supercavitation has been implemented to an idea that has been used to significantly increase the velocity of torpedoes in Chinese and Russian submarines. An example of this is the Russian VA-111 Shkval torpedo. The idea being that if your torpedo is expelling a gas out of the nose cone region, creating a boundary layer between the water and the torpedo, the torpedo will be facing much less resistance relative to when it was traveling in water alone. This allows a torpedo to travel at faster speeds making any evasive actions of the targeted submarine or surface vessel extremely difficult. The purpose of our project is to explore the benefits and limitations of supercavitation and whether it should be implemented within submarines. The obstacles we are facing include finding ways to effectively create a boundary layer in the nose cone region suitable for submarine designs to travel through water. We are currently in the process of refining a rail and arm system to test our designs. The arm will be attached to the submarine's head and its casing which is mounted on a bearing plate.