Evaluation of Scrubber Designs for Cleaning Ship’s Hulls

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Designs for scrubbers to be deployed on a Remotely Operated Vehicle (ROV) were evaluated for speed and efficiency of removing sea growth from ship’s hulls without damaging the underlying paint. Soft sea growth is the most common type of sea growth seen on ships hulls. It was hypothesized that, “When a spinning scrubber is designed to act as the impeller of a centrifugal pump, then a design with curved blades which optimizes water flow will outperform a lower flow design with straight blades, with a solid scrubber design providing the least efficient cleaning. The differences will be due to the Bernoulli effect, which decreases water pressure as the water flow increases, allowing the scrubber to be pulled in tighter to the hull.” The three different scrubber designs were all tested by cleaning the soft sea growth off the hull of a ship. Differences in cleaning were observed, leading to the conclusion that the centrifugal pump worked and was able to successfully remove water from the side of the hull while allowing surrounding water to flow in. Due to this, the scrubber with the curved blade design performed the best due to the speed at which it could remove sea growth from the ship’s hull. By designing an ROV that could effectively perform this task, the need for costly divers is eliminated. This method provides a more cost effective and easier method for a tedious task that needs to be performed regularly in order to avoid countless problems.

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