The Use of Electrohydrodynamic Thrust in Marine Propulsion Systems

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With the goal of reducing our current demand, and reliance on the combustion of fossil fuels, there have been many studies on the development of ionic wind. Ionic wind creates thrust is the long-proven concept of ionizing air particles, by emitting high voltage between a positive and negative electrode, resulting in the flow of air from the positive to the negative side creating thrust. This concept has been long studied and optimized by MIT and NASA. However, this has only been studied using air as a medium. For the first time ever, we proved that thrust can also be created by ionizing water. Drawing from design already created, we established if our experimental procedure will lend to the movement of air, to no avail. However, after five separate adjustments to our original design, opting for a condensed flow area, and lighter craft, we detected noticeable movement of water. We confirmed our results using the same procedure and concluded that our power source and design produced an average movement speed of 2.1 cm per second, proving that ionic wind does function underwater. This could lead to the development of an environmentally friendly alternative to fossil fuel heavy engines, and improve the overall efficiency of the maritime industry. Overall, our project has just opened the door to many other implementations of ionic wind, ranging from an environmentally friendly source of propulsion in large aquatic vehicles to simple pumps in pipes, and so many others that have only yet to be discovered.

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