

Analysis of RIM-driven turbines: a literature review

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One of the common and convenient methods for generating electricity from the marine environment is extracting energy from the water containing kinetic energy. Due to environmental concerns, rim-driven turbines are proposed, with several advantages such as efficiency due to compact design and reduced failure rates. This review paper aims to evaluate the various aspects of turbines to denote the necessity of applying Rim-driven turbines. In the first part of a review paper, the energy potential of the marine environment was discussed. The second part is focused on the importance of research and indicates both advantages and disadvantages of the design and utilization of Rim-driven propellers. Lastly, some literature has addressed blade cavitation, which is the main factor contributing to energy loss. Therefore, we discussed the literature that has addressed blade cavitation and studied the effect of cavitation on energy-generating efficiency. Then, we divided the literature according to its scope and indicated the drawbacks. In essence, they lacked experimental validation, contained high errors, or lacked higher-precision design models that are essential in developing energy-efficient energy systems. The results of this literature review could be used to address the drawbacks in the application of Rim-driven thrusters and initiate further research in the field.