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Development of Amphibian Robot for Ship Hull Cleaning

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Abstract

Divers and inspectors are primarily in charge of a ship's services and maintenance, which include a wide range of difficult tasks such as cleaning ship's hull, inspecting the ship's surface, and so on. In general, ship surfaces are cleaned on a regular basis, whereas drydock inspections are done once a year. This practices aids in ensuring low fuel economy of a ship's performance; nonetheless, the process to execute the work has been identified as high risk. Considering how rapidly technology has advanced, a practical solution is needed. As a result, a new and inventive strategy is required to

address these difficulties. This research describes the development of a permanent magnet wall climbing robot with a detachment platform. To demonstrate the concepts, a number of simulations and tests were performed on a prototype robot. The performance of the wall-climbing robot has been investigated, and further discussions regarding the experiments have been conducted in the research. © 2022 IEEE.

Author keywords

detachment platform; magnetic wheel; permanent magnet; wall climbing robot

Indexed keywords

Engineering controlled terms

Fuel economy; Hulls (ship); Intelligent robots; Mobile robots; Robot applications

Engineering uncontrolled terms

Amphibian robot; Detachment platform; Magnetic wheels; Practical solutions; Prototype robot; Ship hull; Ship performance; Wall climbing robot

Engineering main heading

Permanent magnets

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Abstract

Author keywords