Unmanned Vessels for Maritime Trade

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Abstract

This project studies the technological and commercial feasibility of using unmanned vessels for maritime trade, and develops a proof-of-concept prototype.

Review of existing literature on Unmanned Surface Vehicles(USV) and research on the inner dynamics of the cargo shipping industry are combined with the technological expertise gained from prototype development.

Our findings indicate that while technological and commercial factors are favorable for the use of unmanned cargo vessels, legal and liability issues prevent their deployment in the immediate future.

Methods

• Review of the literature on Unmanned Surface Vehicles(USV).
• Study of the container liner industry.
• Review of related studies and projects.
• Determination of impact of unmanned cargo shipping on vessel design and voyage characteristics.
• Review of microcontrollers, sensors and microcomputers available.
• Computer Automated Design(CAD) of ideal unmanned cargo vessel.
• Computational Fluid Dynamics(CFD) analysis of linear hull formations enabled due to unmanned vessels.
• Development and testing of miniature prototype unmanned marine vehicle.
• Validation of unmanned cargo shipping business model using startup programs.

Results

Prototype has been developed successfully

Prototype tested satisfactorily in a lake

Technological challenges have been identified

Business model validated by industry players

Linear hull formations are more fuel efficient

Ideal cargo USV is smaller

$1.1MM is saved per cargo ship annually

Conclusion

The use of unmanned vessels for maritime trade is both technologically and commercially feasible. Unmanned cargo vessels will be smaller, and navigate in linear formations. However, legal and liability matters regarding the deployment of such vessels are yet to be resolved by regulatory authorities.

References


