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Time-Domain Simulations of the Coupled Dynamics of Surface Riding Wave Energy Converter

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Abstract : A surface riding (SR) wave energy converter (WEC) is designed and its feasibility and performance are numerically simulated by the author-developed floater-mooring-magnet-electromagnetics fully-coupled dynamic analysis computer program. The biggest advantage of the SR-WEC is that the performance is equally effective even in low sea states and its structural robustness is greatly improved by simply riding along the wave surface compared to other existing WECs. By the numerical simulations and actuator testing, it is clearly demonstrated that the concept works and through the optimization process, its efficiency can be improved.

Keywords : computer simulation, electromagnetics fully-coupled dynamics, floater-mooring-magnet, optimization, performance evaluation, surface riding, WEC
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