Title: **Power System's Dynamic Simulations Supporting Closed Bus Operations**

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Abstract

Economic and environmental factors have focused the attention of vessel owners on finding the most efficient way to operate redundant marine power systems. One of the ways to achieve this is using an operational configuration called 'closed busties'. This configuration, although very effective economically, creates fault propagation paths between redundant machinery groups which might lead to a loss of position. This paper discusses power system modelling and transient state analyses as a tool to verify the reliability of the power plant in cases, where live tests performed on the vessel are not sufficient on their own. The advantages of using mathematical models are presented, along with their limitations. Example results from the analysis of semi-submersible unit is presented, which consists of prime mover faults, short circuit faults on main bus