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EVALUATION OF PROPELER INDUCED VIBRATIONS

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During the early design stages a fairly evaluation of propeller induced forces on the aft part of a Ro-Ro ship could become of paramount importance and, often, very difficult to be handled. The complex hydrodynamic interactions and the limited ways of wake factor evaluation, when experimental values are not available, lead to the necessity to consider Computational Fluid Dynamic tools in order to have a first input for the global vibration problem.
The paper is focused on the determination of propeller induced pressures based on a CFD approach, as a viable alternative of the experimental tests. By considering the calculations of the pressure field developed in the aft part of the ship, the results are further used as input data for the dynamic linear analysis performed by a Finite Element solver. Consequently, appropriate technical solutions and a preliminary structural optimization become affordable. The paper is presenting comparative results.
Mention should be made that such an approach can provide reliable results for a better EEDI and, from this point of view, is line with the higher requirements regarding the marine environment pollution and greenhouse gases emissions. Better on-board comfort indexes can be also attained.

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