

PART-B: Spectral Fatigue Analysis of a ship using FEM



Yogendra Singh Parihar



Amresh Negi



Dr. Suhas Vhanmane

Yogendra Singh Parihar received Master degree in Ocean Engineering and Naval Architecture from IIT Kharagpur. He is working in research and innovation department of Indian Register of Shipping from last 10 years. He is mainly involved in design assessment of ships. His areas of specialization are fatigue analysis, ultimate strength analysis and direct sea-keeping based strength assessment of ships.

Amresh Negi is working in research division of Indian Register of Shipping (IRS) since 2006. He received his graduation in Mechanical Engineering and obtained master degree in Ocean Engineering and Naval Architecture from Indian Institute of Technology, Kharagpur, India. He has been involved in various consulting and research works related to development of numerical programs for the variety of marine structural application. His area of interest includes the hydrodynamic load and motion response computation based on potential theories, prediction of long-term and short-term loads on the marine structures and ship stability in waves.

Dr. Suhas Vhanmane is associated with research division of Indian Register of Shipping since 2002. He has obtained his Master and Doctorate degrees from Indian Institute of Technology Kharagpur. Currently, he is In-Charge of Strategic Research. His main areas of work relate to structural analysis of ship structures, structural reliability assessment, fatigue, ultimate strength assessment.

Abstract

The present paper discussed about the Spectral Fatigue Analysis (SFA). Full stochastic spectral analysis is an advance approach to evaluate fatigue response of ships. It involves the application of direct hydrodynamic loads and structural analysis. In-house developed numerical codes used for loads evaluation while the structural analysis is performed using FE model. The complexities of load application on FE model are discussed. Apart from SFA methodology, a comparison of FE based SFA is also made with other Fatigue assessment approaches as discussed in PART-A of this paper.