Dr. Spyros Hirdaris

Dr. Spyros Hirdaris is Associate Professor of Marine Technology at Aalto University, Finland. He completed his PhD in 2002 on Ship Science (Hydroelasticity of Ships) at the University of Southampton, UK. To date he has been sponsored by the EU, Lloyd's Register and their Foundation, British Maritime Technology and the Academy of Finland. His research focuses on the prediction of sea loads and the analysis of the performance of floating assets operating in extreme conditions. He is also interested in the de-risking emerging technologies for use in the design and operations of safe and sustainable ships. He is European Engineer, Chartered Engineer, Fellow of the Royal Institution of Naval Architects (FRINA, UK) and Fellow of the Society of Naval Architects and Marine Engineers (FSNAME, USA). He has been participating in the International Ships and Offshore Structures Congress since 2006, serving as member in various committees and chair of committee I.2 on Loads and member of the International Towing Tank Conference since 2021. Before joining Aalto university he worked for 14 years for Lloyd's Register Classification Society and spent short spells with UK based engineering consultancy firms. This work involved research and product development, planning and strategy for R&D, consultancy and marine new construction activities. His editorial duties involve Associate Editorship of the IMechE Proceedings Part M : Journal of Engineering for the Maritime Environment (Sage Ltd.) and membership in the editorial board of Ocean Engineering (Elsevier).

Keynote Presentation 9

Fluid structure interaction models for the analysis of the dynamic response of ships in intact and damaged conditions

The analysis of the dynamic response of ships in intact and damage conditions requires a realistic idealization of environmental and operational conditions by multi-physics methods. This keynote will outline recent research on the development and implementation of fluid structure interaction models and procedures that can be used to idealise the influence of strongly coupled effects on wave loads and responses. The methods presented combine explicit discretization

schemes that couple structural dynamics with hydrodynamic actions. It is demonstrated hydro - structural effects may be critical for those cases that stochasticity and/or hull flexibility influence the response. Whereas monolithic schemes are still relevant, two-way coupled partitioned methods are useful for the estimation of peak transient values of at early stages of the dynamic response.