

Contribution ID: 90

Type: Paper

Rapid prototyping for enhanced dynamic positioning systems.

Friday, 17 June 2022 09:20 (20 minutes)

The paper aims to show the design procedure for a Class-2 dynamic positioning system, from initial conceptualisation to factory assessment test. The approach involves the use of simulation-based design combined with hardware in the loop testing.

This kind of approach involves a detailed knowledge of the investigated ship but gives significant well-known advantages. The main are: the reduction of the design duration, the optimisation of the system performance, the debug of the control logics before the installation onboard, the reduction of the sea trial costs. Finally, the result of this process is a product ready to be installed onboard. Moreover, over the years, the interest of the classification societies in simulation results for certifying such systems is increased.

This study shows both the approach and the results of designing a dynamic positioning system for a Platform Supply Vessel. A custom simulation platform has been developed to have realistic feedbacks of the case-study ship. The DP controller structure, including regulator, force and thrust allocation; have been conceptualised, and then, after the porting procedure, the DP software has been downloaded in the real PCL. Several HIL tests have been carried out to fine-tune the controller parameters. The results show, under different environmental conditions, the respect of the design criteria.

Primary authors: Dr DONNARUMMA, Silvia (University of Genoa); Dr FRUZZETTI, Camilla (University of Genoa); Prof. MARTELLI, Michele (University of Genoa); Dr PECORARO, Andrea (Seaseam SpA); Dr SEBASTIANI, Luca (Seastema SpA)

Presenter: Dr DONNARUMMA, Silvia (University of Genoa)

Session Classification: 5C

Track Classification: Ship propulsion, machinery and systems