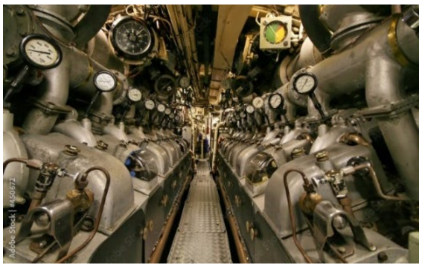
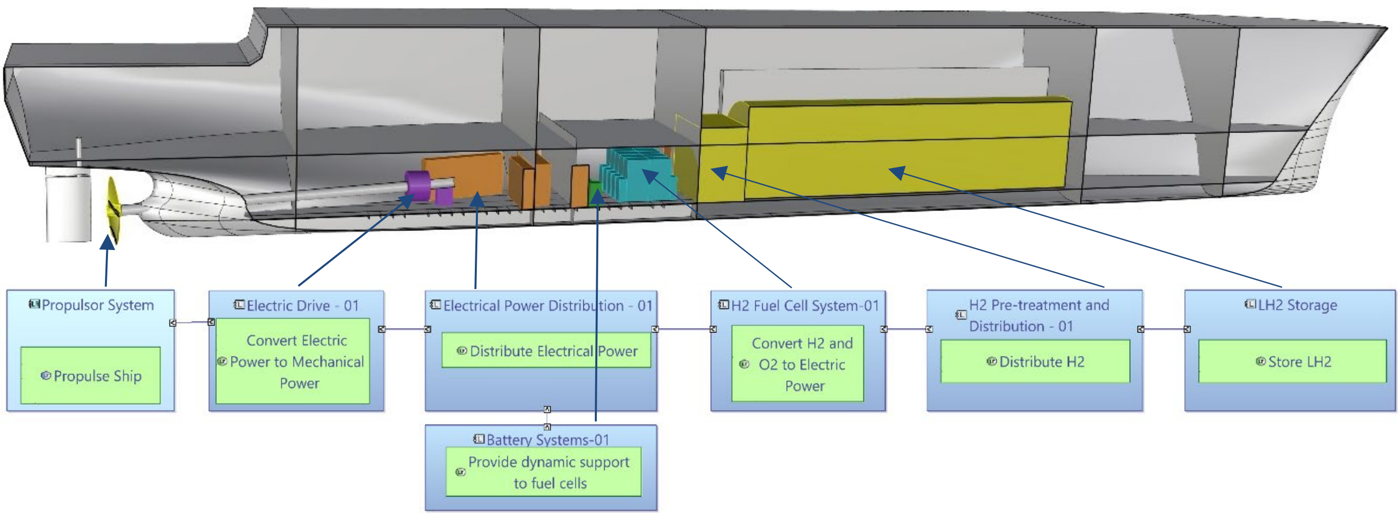
Fault analysis, trouble shooting and consulting of ships' Power, Propulsion and Energy systems

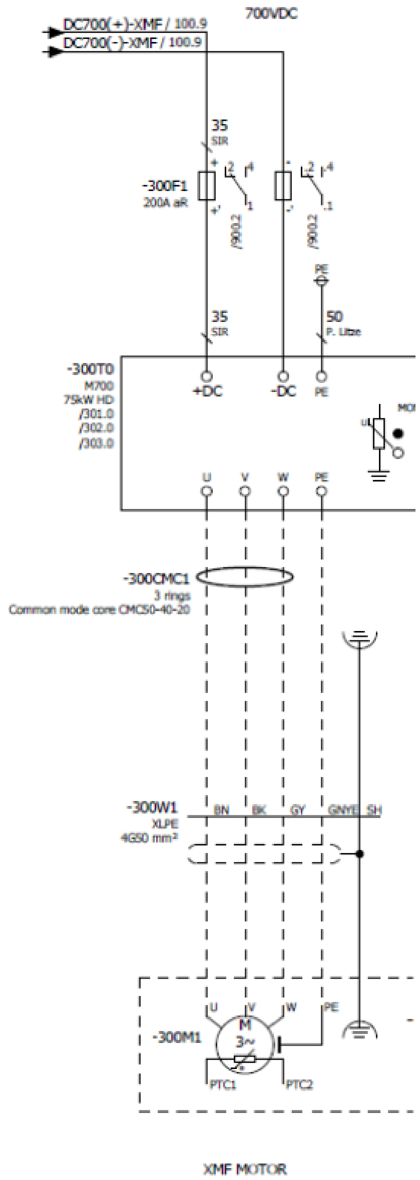
Sustainable ship operations require alternative Power, Propulsion and Energy (PPE) systems, posing new technical challenges. Future proof PPE systems involve intricate high-tech subsystems demanding top-tier integration across mechanical, electrical and automation & control boundaries. Do you consider or did you already select a future proof PPE system on your ship and encounter technical challenges? Do you wonder whether a proposed PPE system design will work properly and reliably? Or, are you faced with an installed PPE system that does not satisfy expectations? MARIN's team of specialists offers unbiased analysis and support to face these challenges and solve them.



The future proof PPE systems contain high-tech subsystems that require a high standard of integration. The integration often crosses the mechanical, electrical or control & automation boundaries. For trouble shooting we can set up a simulation model in our virtual Zero Emission Lab from which we can perform the diagnosis, and test and demonstrate a proposed solution.



Matching system models to ships' power- & energy systems



Example of a DC connected motor drive

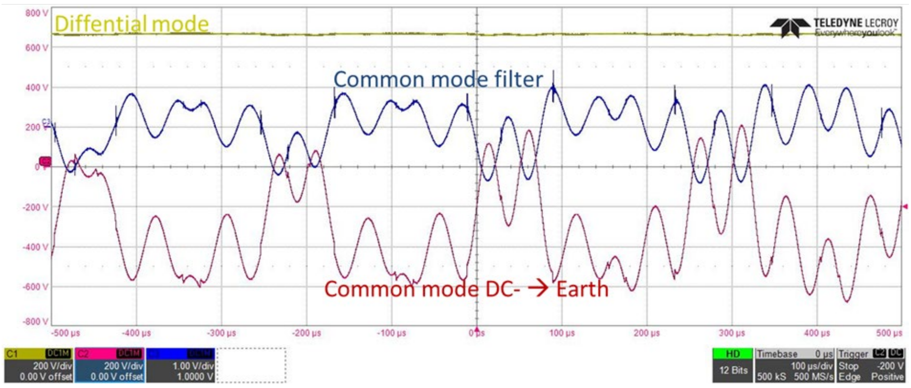
Multi-disciplinary approach

MARIN offers comprehensive support. With our team of naval architects, mechanical, electrical, control & automation specialists as well as our on-board measuring and hydrodynamic experts, we specialise in a multi-disciplinary approach, tackling challenges from a system integration perspective. We address your queries and issues through measuring, modelling, virtual and physical testing, analysis, consultation, and reporting. Utilising our Zero Emission Lab (ZEL) or the virtual ZEL, we create simulation models for diagnosis, experimentation, and demonstration of proposed solutions. Throughout the analysis, we work closely with you, focusing on the relevant discipline, and conduct tests within a multi-disciplinary PPE system environment.

Examples of features and issues that occur in practice and where we can assist are the effects of:

- Consumer excited disturbances, like sea state or crane dynamics on power generation and distribution.
- Equipment excited electrical disturbances, like common mode.
- Control strategies on the capabilities and reliability of power systems, like propulsion control or power control.
- Physical behaviour of new fuels, like hydrogen and methanol on the dynamic response of combustion engines and fuel cells.
- Limits in dynamic response of combustion engines and fuel cells on the capabilities and reliability of power systems.

MARIN can assist in solving these problems through e.g. component adjustments, improving control strategy or system architecture.



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