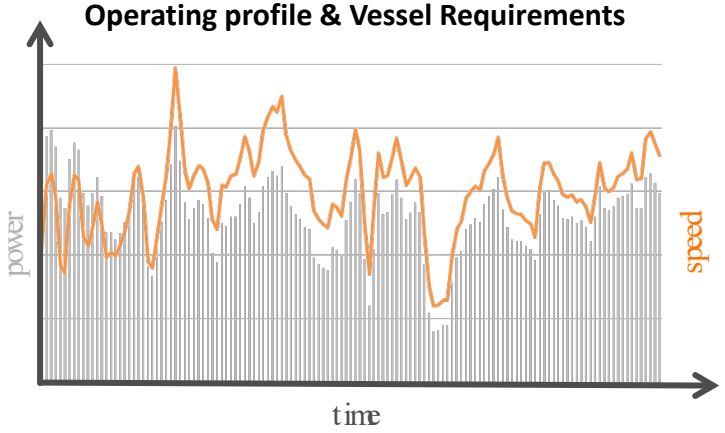
Integrated Electrical Systems for Small Passenger Ferry Operations

Dave Adams, Wartsila

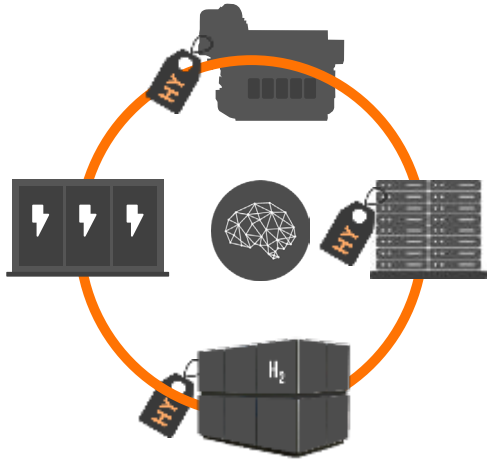
Ferry Design Considerations

Traditional Functional Design Cycle

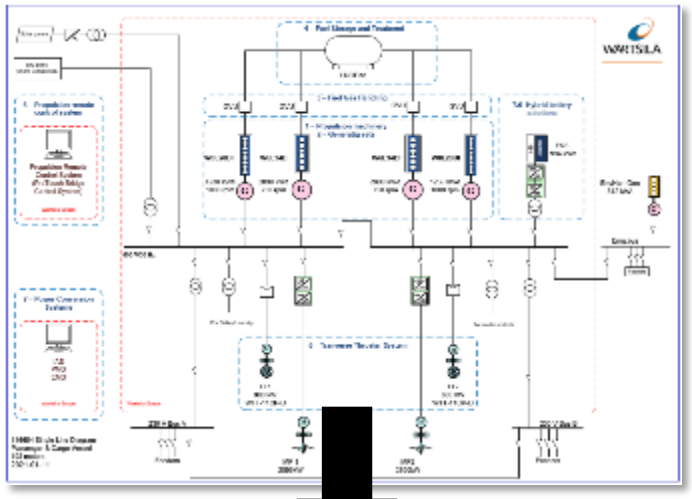
Operating profile & Vessel Requirements



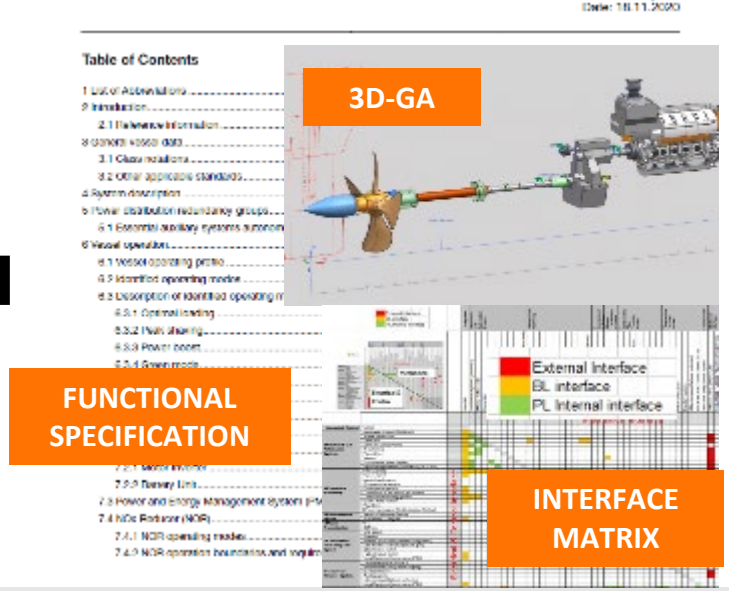
Customer Co-creation, data driven design, Value Proposition, Functional Definition



Optimized System Definition



System Functional Specification



De-Risking & Secure Final Alignment of Vessel Specification, Technical Specification, Functional Spec.

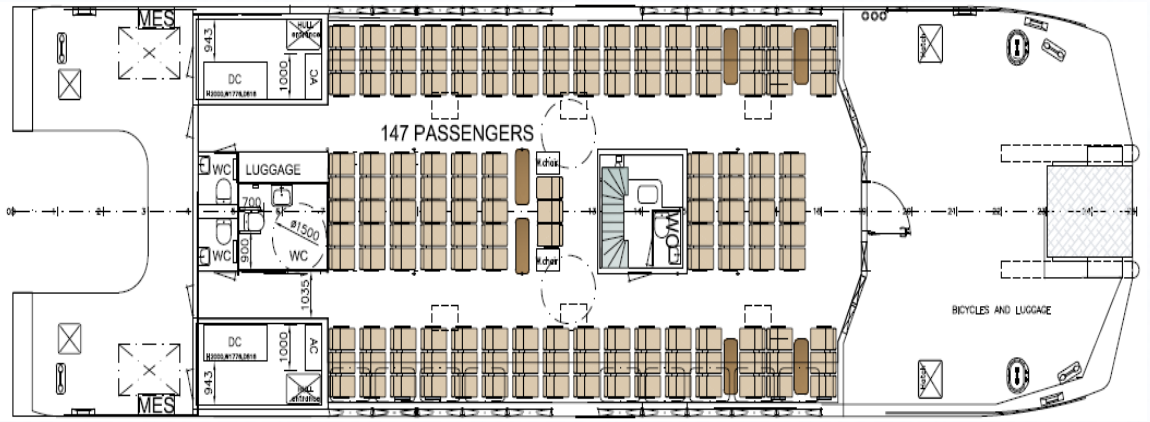
Contracting

M/V Medstraum

Project Objectives

A fully electric zero-emission passenger fast ferry developed through advanced design methods and modular production.

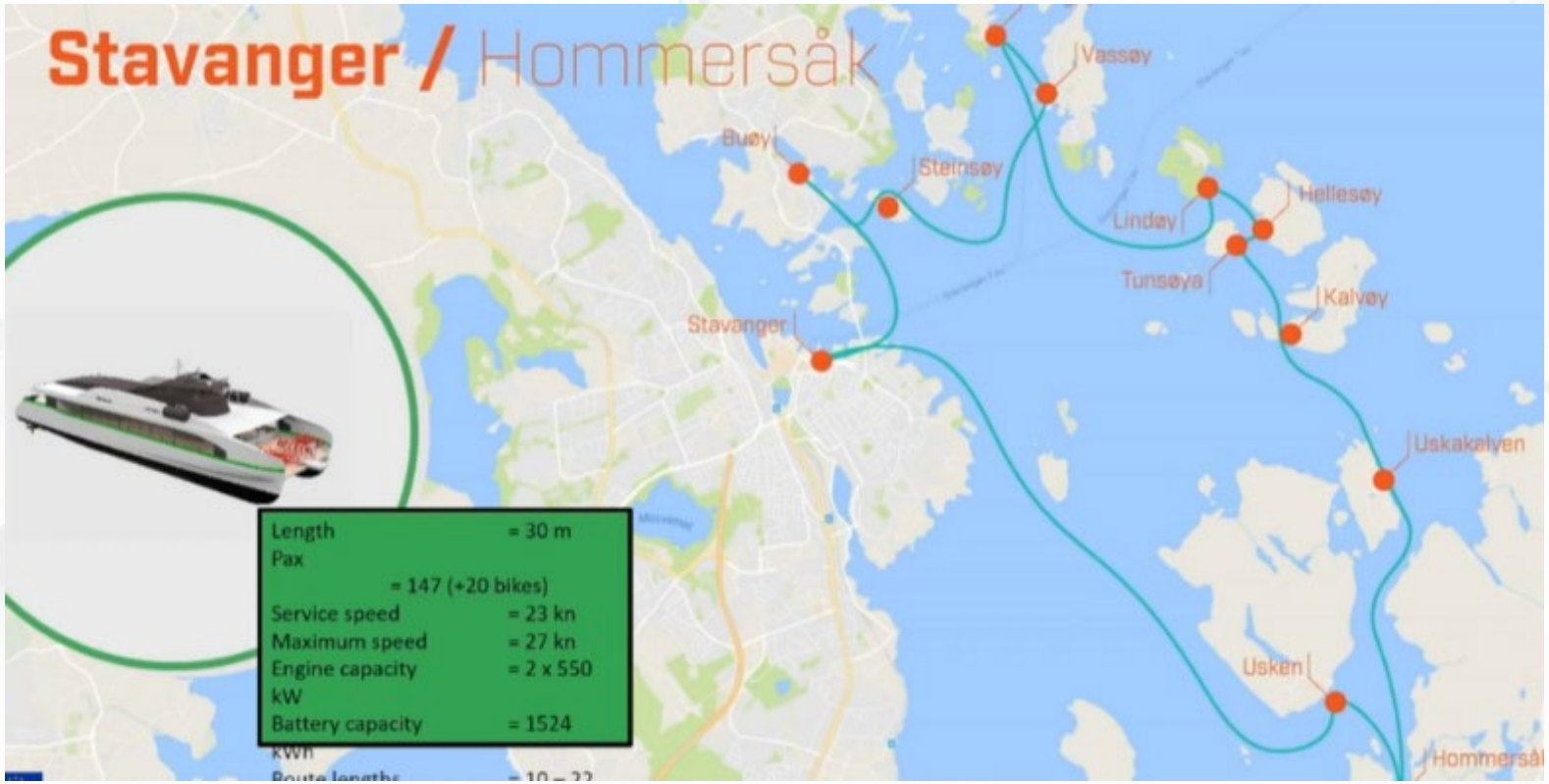
- Zero GHG and noise emissions
- 25% lower production costs
- 70 % lower engineering costs
- Superior hydrodynamic efficiency



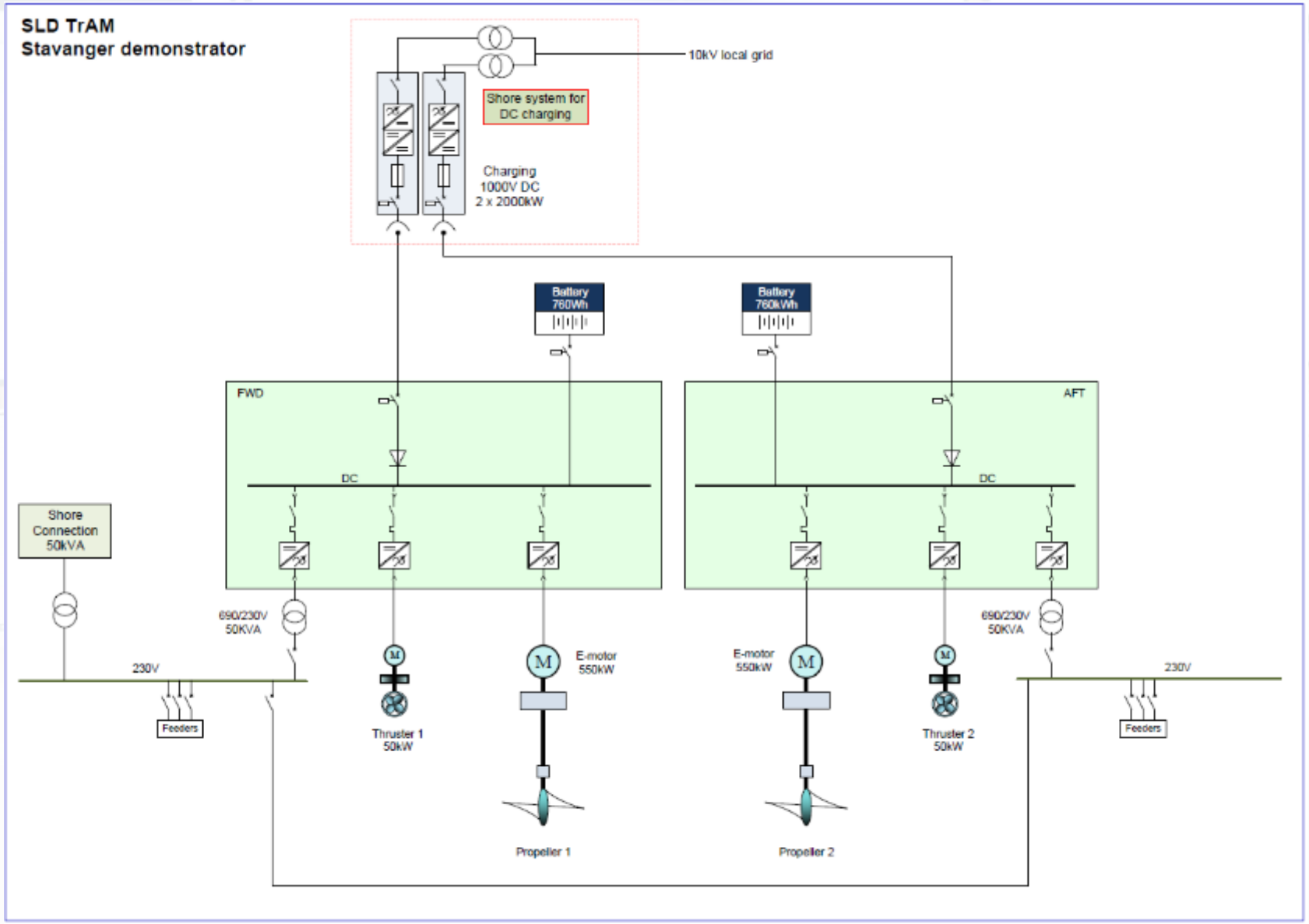
Design Drivers

Ship level energy balance

- Weight
- Hull form and substructure form
- Ship speed
- Route flexibility
- Route table and accuracy
- Optimization of the operation
- Hotel load



Integration Single Line Diagram

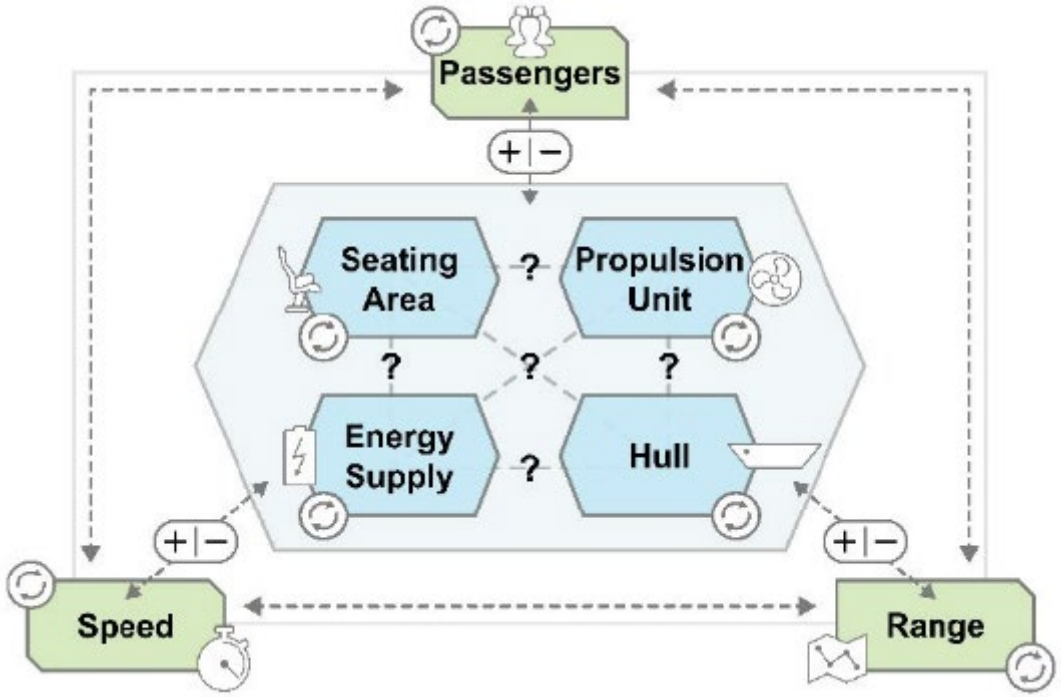


Summary of Key Successes

- Feasibility of the zero emission and fast waterborne transportation concept has been established
- Elaborate hydrodynamic optimisation of parametrically defined design led to high propulsive efficiencies of close to 80% at planned service speed of > 23 knots.
- Implementation of adaptable zero emission propulsion system specifically adapted to hull form and weight requirements. Migration of power equipment from ship to shore.
- Land-side interface with Smart City integration. Configurable grid interface. Manual charging using CCS2 plugs.
- Successful operation on multi-stop routes (Urban Water Metro)

Some Takeaways

- Everything starts with an understanding of the application including the operating environment.
- Constant communication between the operator, the designer and the integrator is essential.
- Understanding the grid is essential but should always be viewed in the context of the full operational scenario.
- Use of a single integrator allows optimization from grid to propeller.

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