

SELECTED REFERENCES



ELECTRIC & HYBRID SYSTEM INTEGRATOR

BRUNVOLL
TRUSTED WORLD WIDE

ELECTRIC AND HYBRID PROPULSION SYSTEM INTEGRATION

Triton Battery Hybrid Propulsion

Hybrid propulsion systems benefit from the flexibility in combining different energy sources e.g. battery, fuel cells, diesel/dual fuel engines.

The Hybrid system enables optimization for ships with variable power requirements. In a hybrid system design the vessel can utilize the power required for the specific operation.

The Hybrid system is a fuel efficient and flexible solution, with high redundancy.

Propulsion modes:

DM-mode for diesel mechanical fuel-optimized propulsion of the propellers up to design speed. The PTO may be used for battery charging.

EL-mode is electrical propulsion for slow steaming powered from battery.

Hybrid mode is a mix with EL-mode on one propeller and DM-mode on the other. It increases the redundancy of vessel and makes it possible to operate with only one engine available.

Boost mode combines DM- and EL-mode for maximum power and speed. It makes it possible to select a smaller engine when max power is only needed incidentally.

Triton Electric Propulsion

Electric propulsion system is a system supply for battery package and electric motors for propulsion with hotel load supply and charge interface to shore connection.

Integrated system design with focus on control philosophy and energy savings.

Charging modes:

PTO Charging of batteries from the main engines

Shore Charging directly from 400V AC shore connection

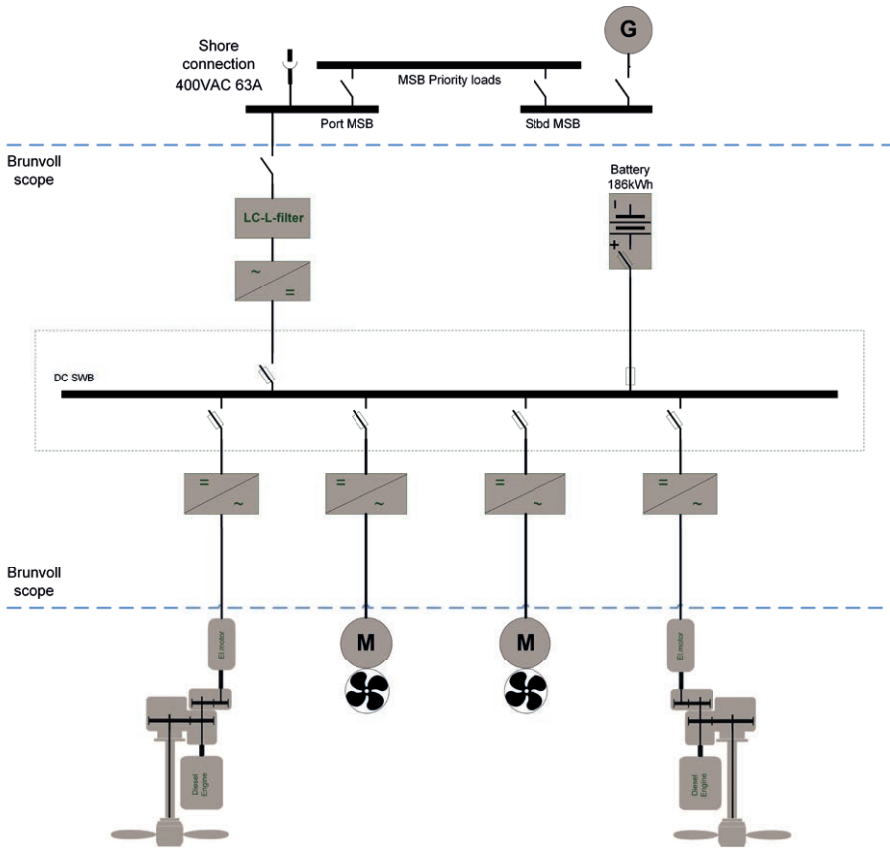
Charging from Hotel Grid (I.E shore connection / aux genset)

DC Charging from shore.

«HST Ella», «Millie» and «Francis» 24m CTV



BRUNVOLL SCOPE OF SUPPLY	VESSEL PARTICULARS	
Triton CPP, Propulsion Control System	Owner	High Speed Transfer
Triton EMS, Energy Management System	Yard	Diverse Marine
Triton SG, Steering Gear System	Designer	Chartwell Marine
Triton JS, Joystick System	Class	BV
Inverters & DC Switchboards	Year Built	2021
186kWh Battery System		

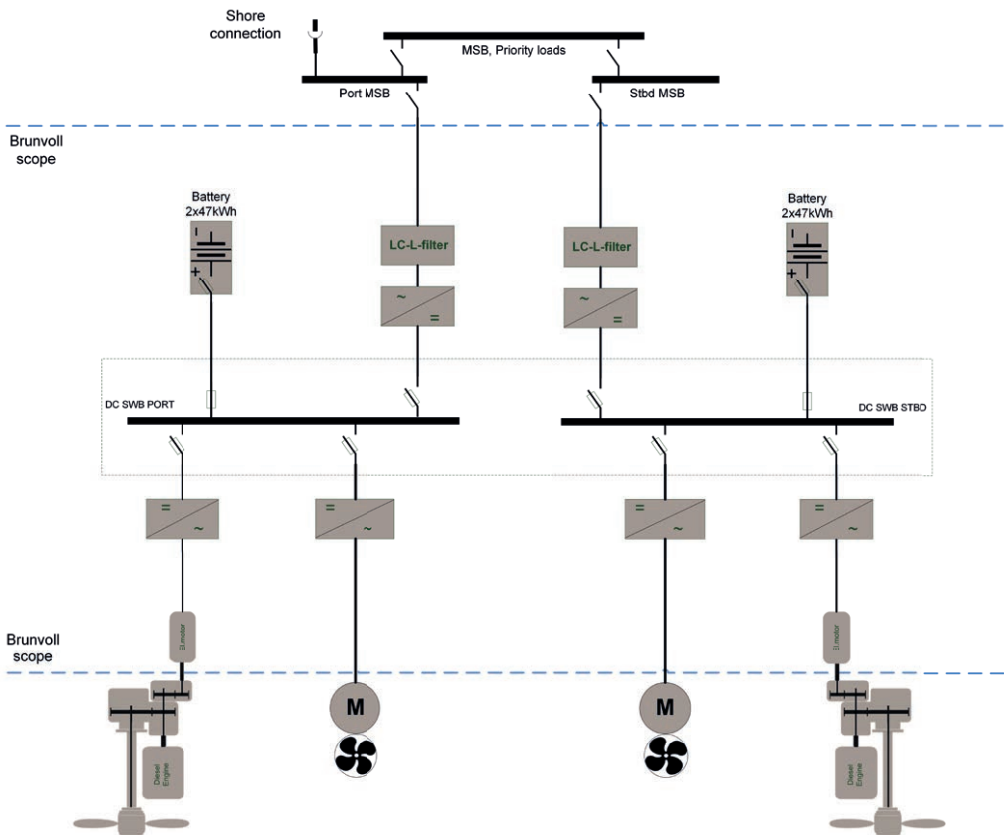


«Inno’Vent» and «Capti’Vent» 26m CTV



Photo: Ocea

BRUNVOLL SCOPE OF SUPPLY	VESSEL PARTICULARS	
2x90 kW EI-motor	Owner	LD Tide
186kWh Battery System	Yard	OCEA SA
Triton CPP, Propulsion Control System	Designer	Mauric
Triton EMS, Energy Management System	Class	BV
Inverters & DC Switchboards	Year Built	2021



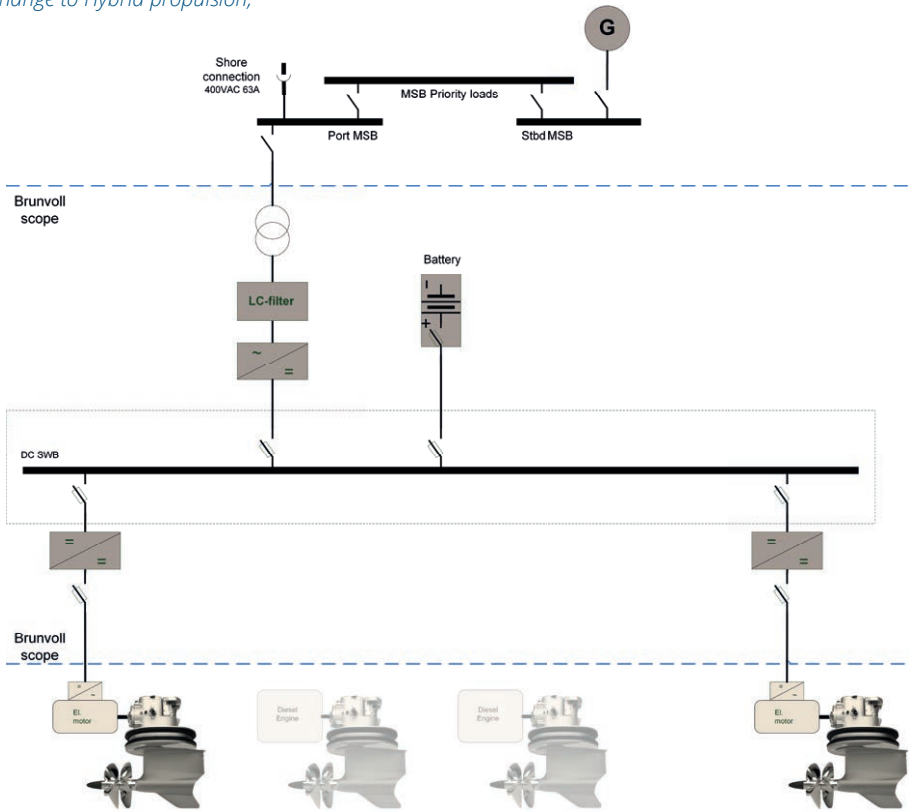
«NR Rival» and «NR Rebellion» 25m CTV



Photo: NR Marine

BRUNVOLL SCOPE OF SUPPLY	VESSEL PARTICULARS	
112,5kWh BatterySystem	Owner	NR Marine
Triton Hybrid DC Switch Board	Yard	Diverse Marine
Triton EMS- Energy Management System	Designer	Walker Marine Design
Inverter	Class	Bureau Veritas
	Year Built	2024 and 2025

«Designed for future change to Hybrid propulsion,
see example below”



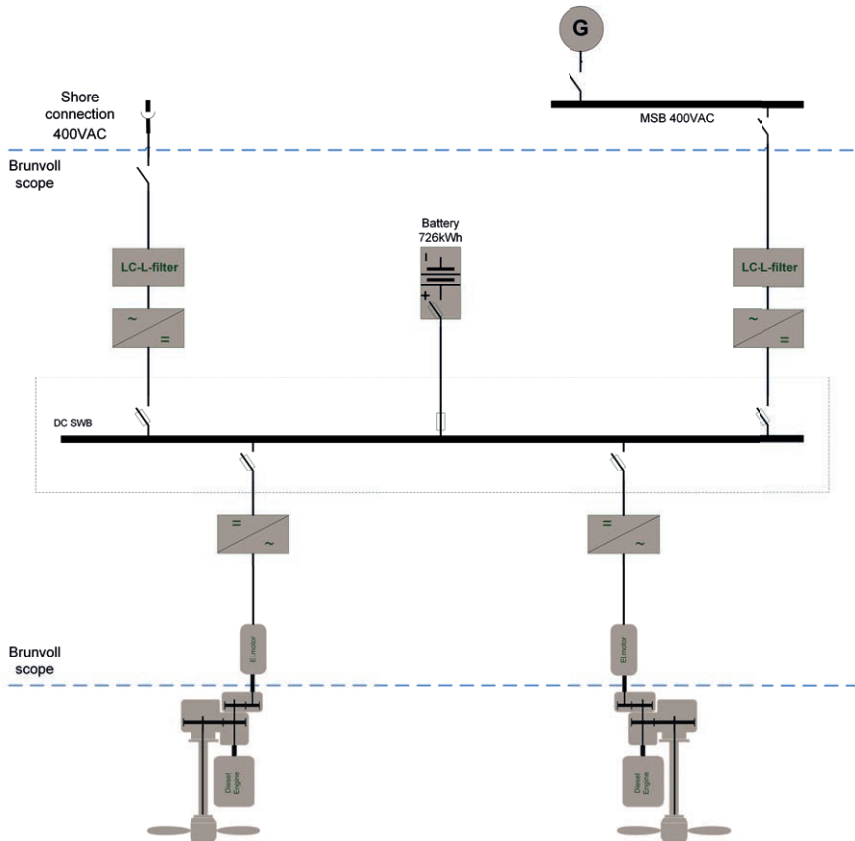
Prepared for Hybrid Propulsion

«Brim» 24m Sightseeing Vessel



Photo: Frode Adolfsen

BRUNVOLL SCOPE OF SUPPLY	VESSEL PARTICULARS	
796 kWh Battery System	Owner	Brim Holding AS
Triton CPP, Propulsion Control System	Yard	Maritime Partner AS
Triton EMS, Energy Management System	Designer	Wave Propulsion AS
Triton SG, Steering Gear System	Class	DNV
Triton JS, Joystick System	Year Built	2019
Triton CHR, Manoeuvre Chair		

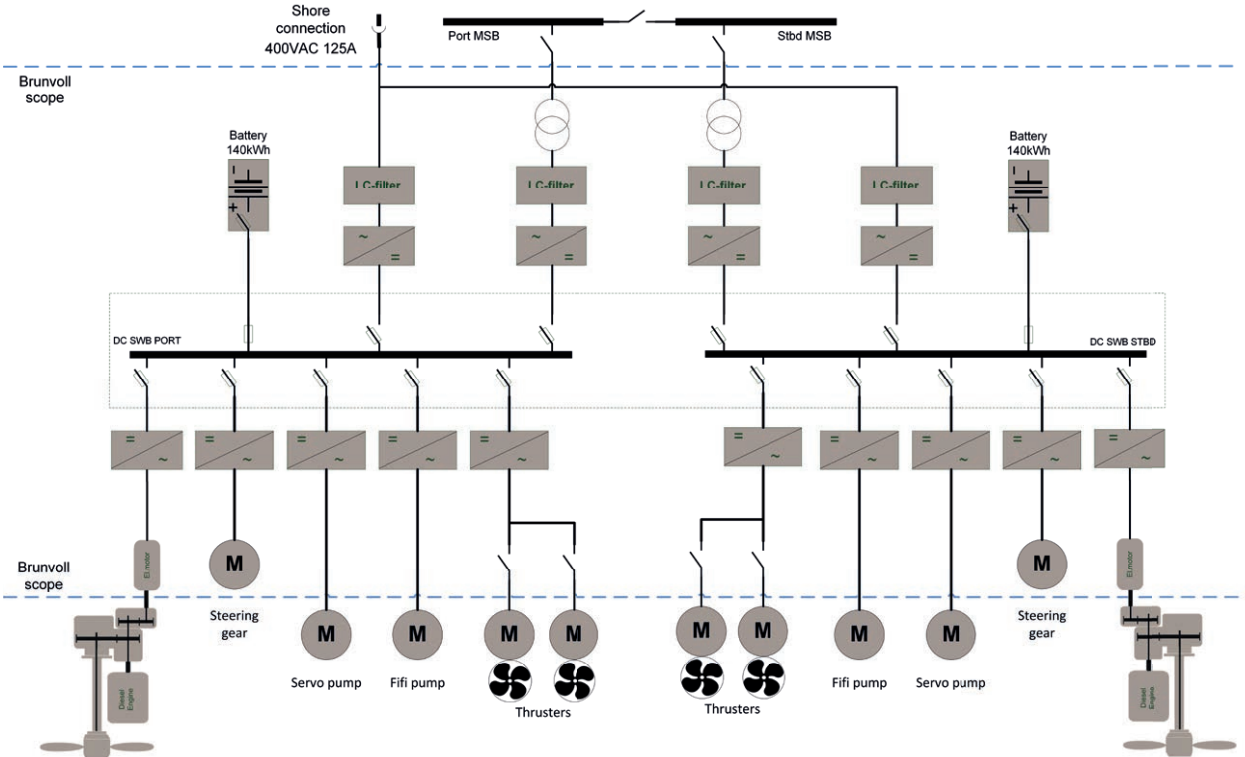


«Erla Kongsdottir» 27m Passenger Catamaran



Photo: Regin Torkilsson

BRUNVOLL SCOPE OF SUPPLY	VESSEL PARTICULARS	
2x90kW EI-motors	Owner	Strandfaraskip Landsins
220 kWh Battery System	Yard	GS Marine AS
Triton CPP, Propulsion Control System	Designer	Ingebjørn Aasheim Ship Design
Triton EMS, Energy Management System	Class	DNV
Triton PMS, Power Management System	Year Built	2020
Triton SG, Steering Gear System		
Triton JS, Joystick System		
Triton CHR, Manoeuvre Chair		
Inverters & DC Switchboards		

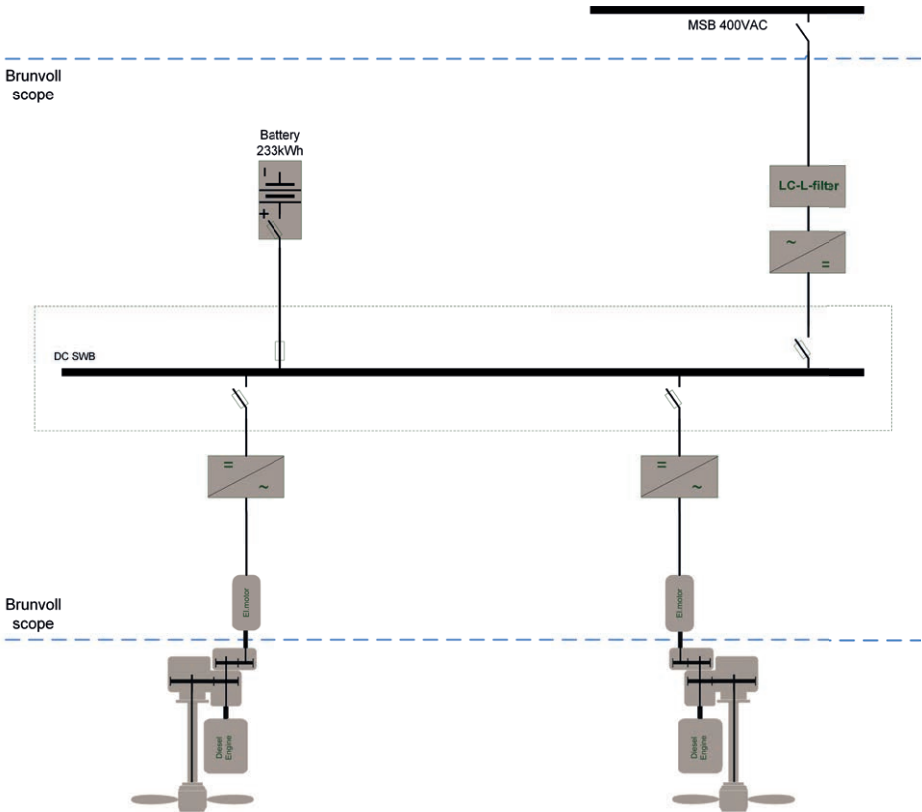


«Geologen» 23m Research Vessel



Photo: Alf Kåre Aasebø

BRUNVOLL SCOPE OF SUPPLY	VESSEL PARTICULARS	
2x60 kW EI-motors	Owner	NGU
233kWh Battery System	Yard	Kewatec OY
Triton CPP, Propulsion Control System	Designer	Kewatec OY
Triton EMS, Energy Management System	Class	DNV
Triton SG, Steering Gear System	Year Built	2022
Inverters & DC Switchboards		

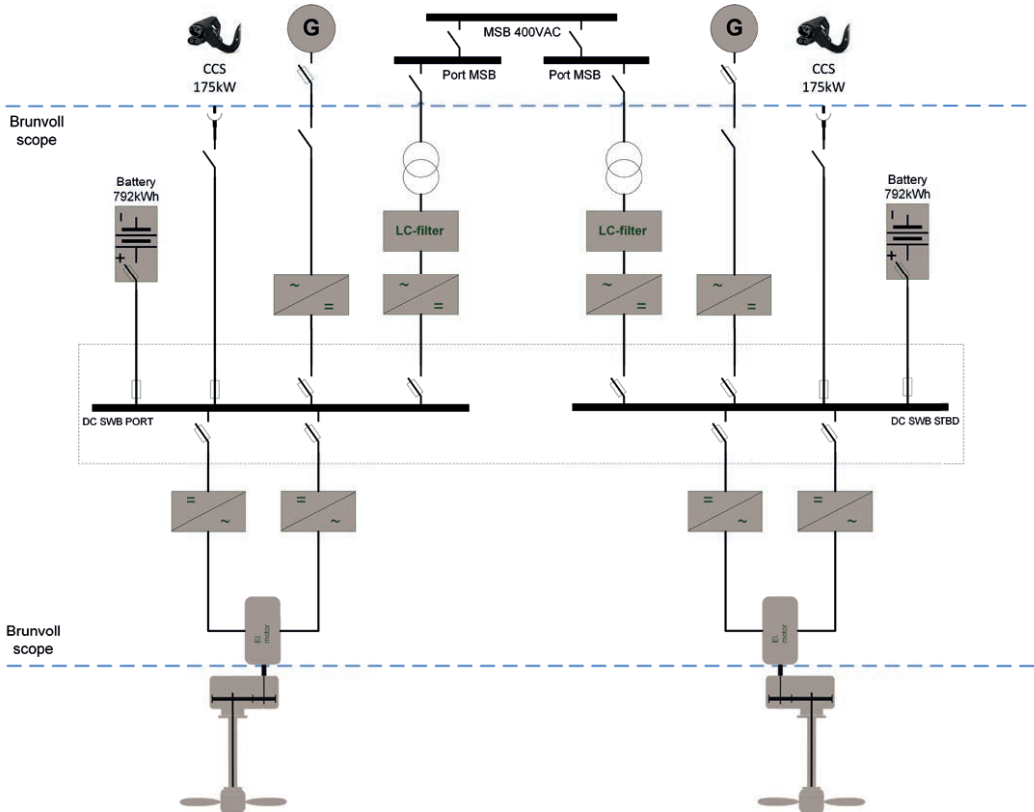


«Fjordøy» and «Fjordled» 24m Passenger Catamaran



Photo: Uavpic / Tor Erik Kvalsvik

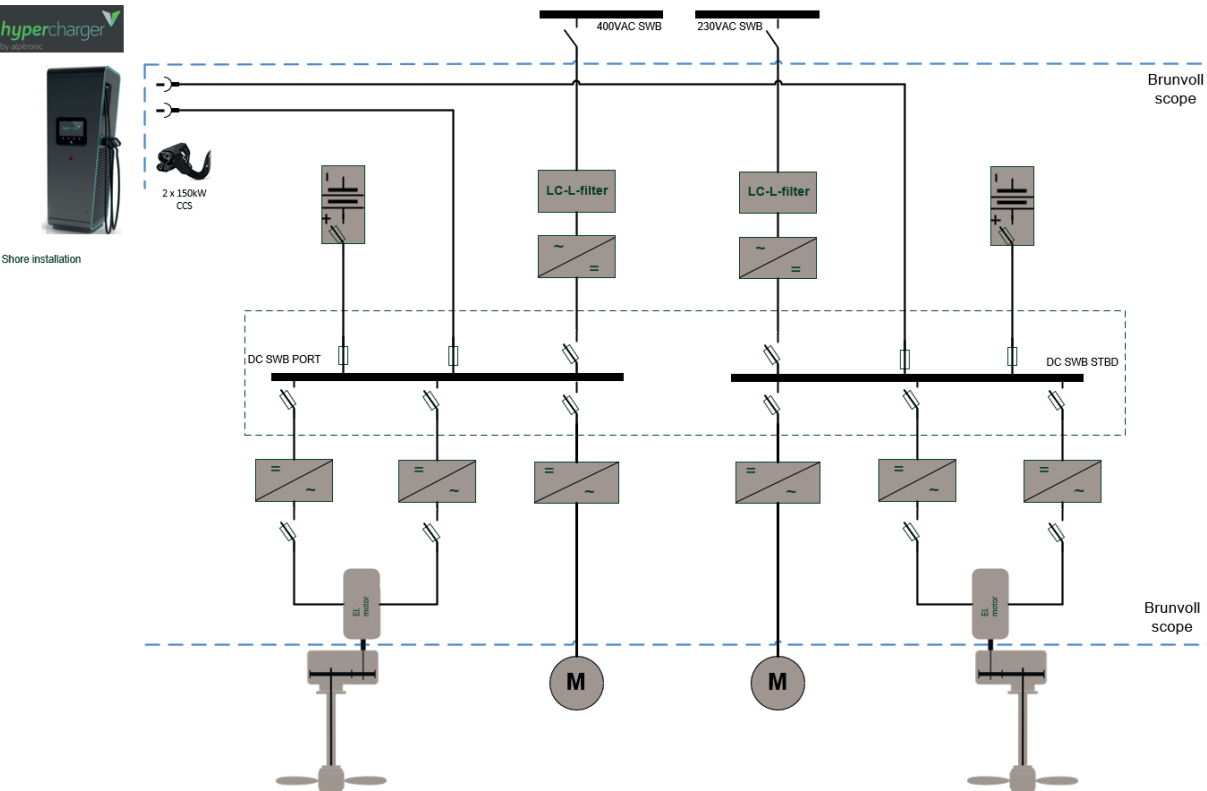
BRUNVOLL SCOPE OF SUPPLY	VESSEL PARTICULARS	
2x400kW EI-motors	Owner	Norled AS
1584kWh Battery System	Yard	GS Marine
Triton CPP, Propulsion Control System	Designer	Ingebjørn Aasheim Ship Design
Triton EMS, Energy Management System	Class	DNV
Triton SG, Steering Gear System	Year Built	2018
Triton JS, Joystick System		
Triton CHR, Manoeuvre Chair		
Inverters & DC Switchboards		



«Grønarók» 14,9m Fish Farm Service Vessel



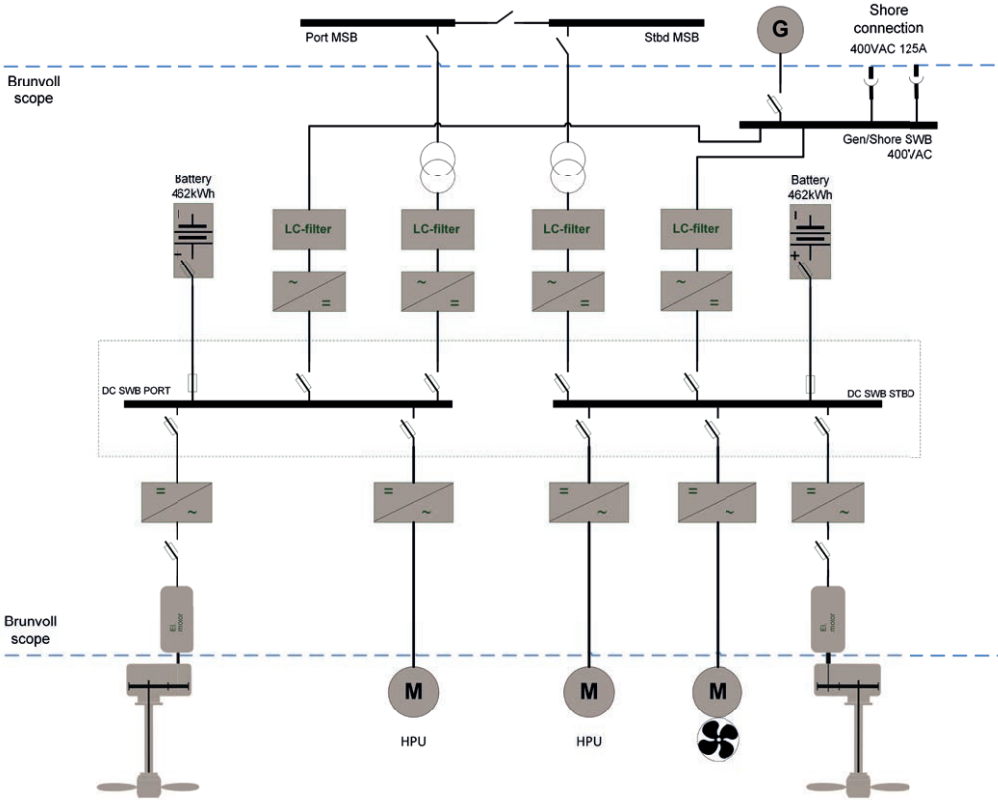
BRUNVOLL SCOPE OF SUPPLY	VESSEL PARTICULARS	
2x250kW EI-motors	Owner	P/F Bakkafrost
1055kWh Battery System	Yard	MEST Shipyard P/F
Triton CPP, Propulsion Control System	Design	MEST 1508WB
Triton EMS, Energy Management System	Class	Faroese Maritime Authority, FMA
Inverters & DC Switchboards	Year Built	2021



«Hovedøya II» 20m Service Vessel



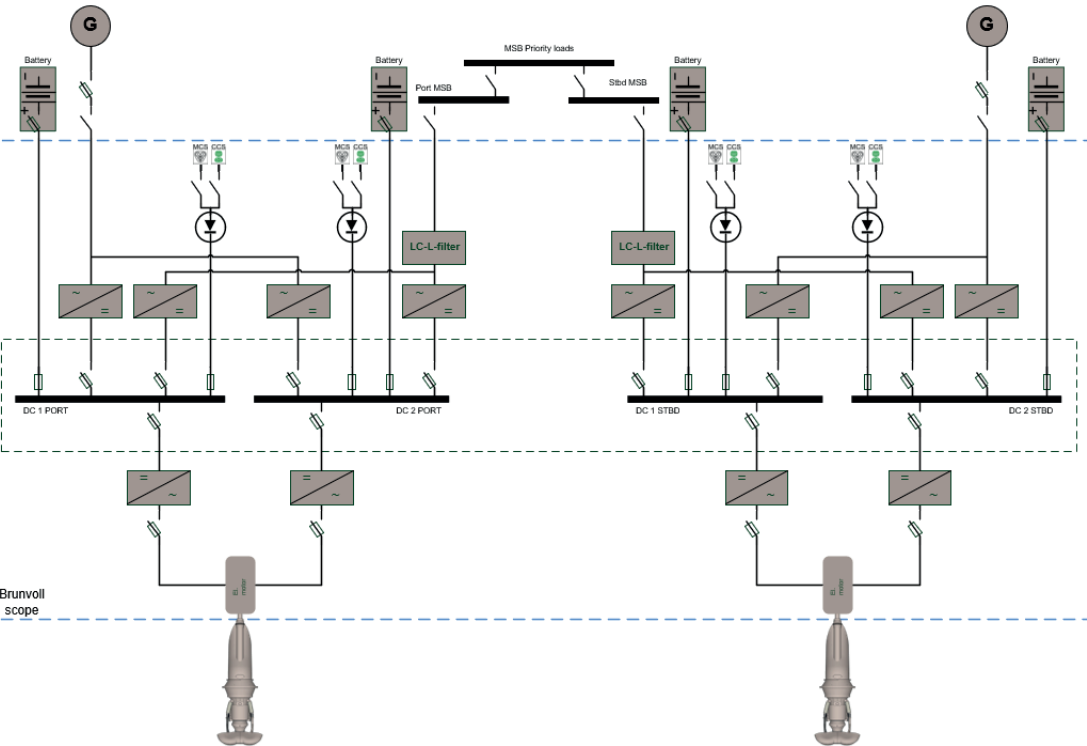
BRUNVOLL SCOPE OF SUPPLY	VESSEL PARTICULARS	
2x300kW EI-motors	Owner	Oslo Municipality
924kWh Battery System	Yard	Hellesøy Verft AS
Triton FPP, Propulsion Control System	Designer	Hellesøy Verft AS
Triton EMS, Energy Management System	Class	DNV
Triton SG, Steering Gear System	Year Built	2021
Triton CHR, Manoeuvre Chair		
Inverters & DC Switchboards		



«Tyrhaug» and «Terningen» 2 x High Speed Passenger Vessels



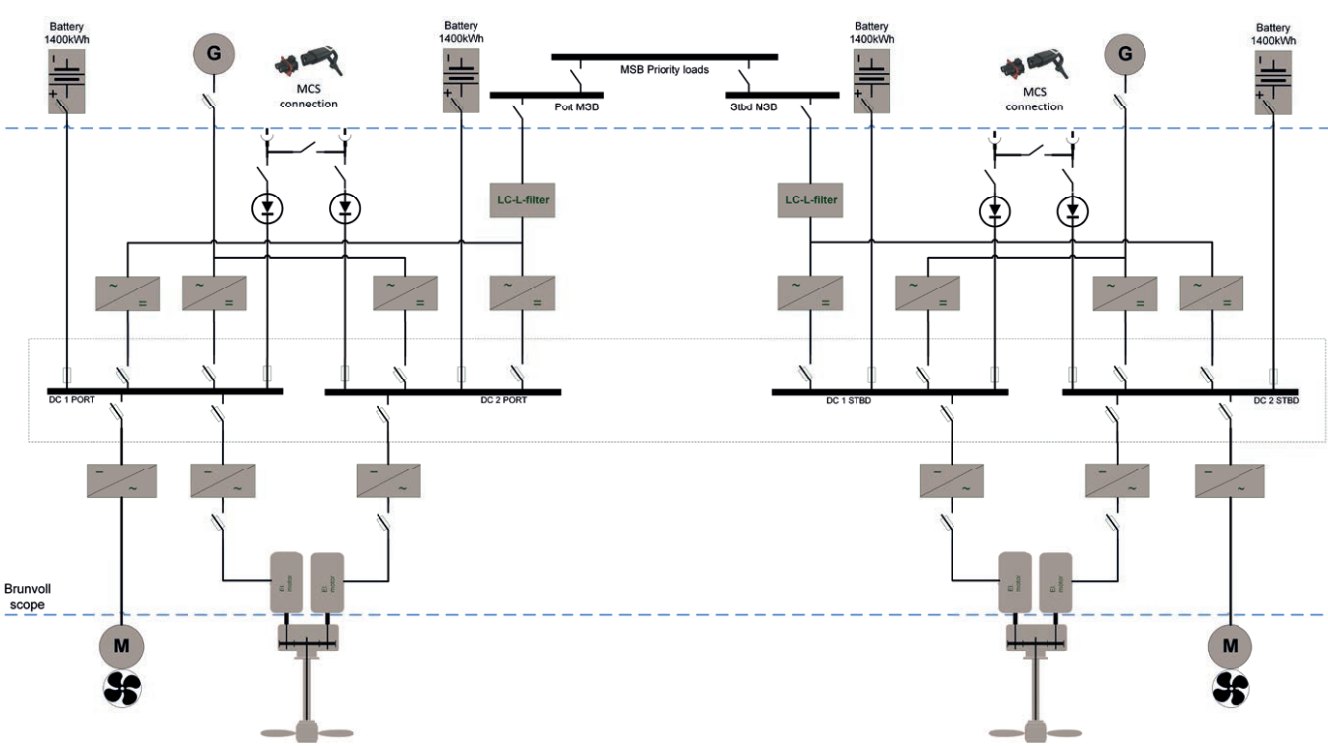
BRUNVOLL SCOPE OF SUPPLY	VESSEL PARTICULARS
2 x 1400kW EI-motors	Owner Fjord1
Interface to 4 x 630kWh Battery System	Yard Br.Aa
Interface to waterjet propulsion	Designer Br.Aa
Triton EMS, Energy Management	System Class DNV
Inverters & DC Switchboards	Year Built 2014, retrofit 2024
DC shore charging	



«Fjord1 Knarvik» High Speed Passenger Vessel / Aero-design



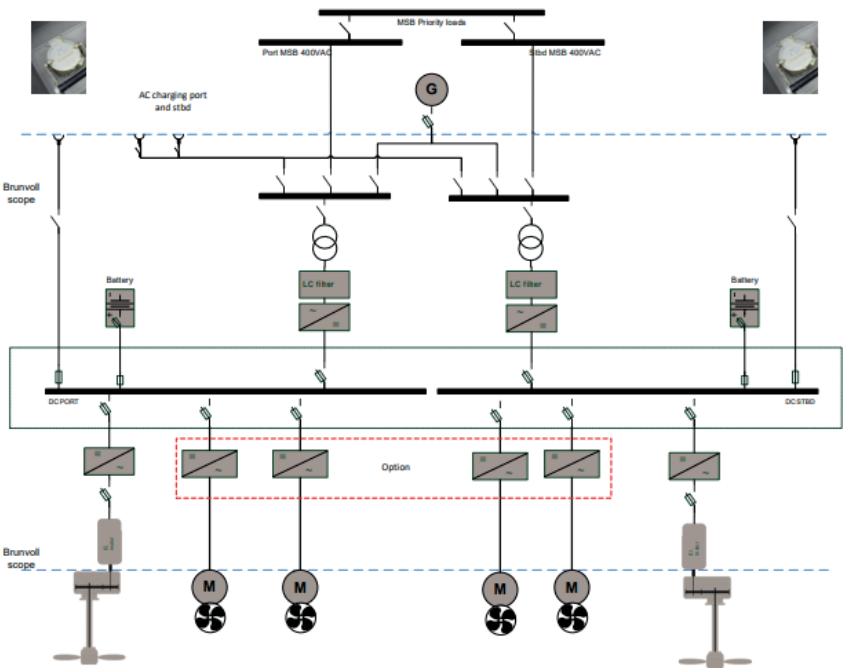
BRUNVOLL SCOPE OF SUPPLY	VESSEL PARTICULARS
4 x 750kW EI-motors	Owner Fjord1
Interface to 4x 1400kWh Battery System	Yard Br.Aa
Triton FPP, Propulsion Control System	Designer Br.Aa
Triton EMS, Energy Management	System Class DNV
Triton SG, Steering Gear System	Year Built 2024
Inverters & DC Switchboards	
DC shore charging	



«TBN» The Fjords & Br Aa Sightseeing Vessel



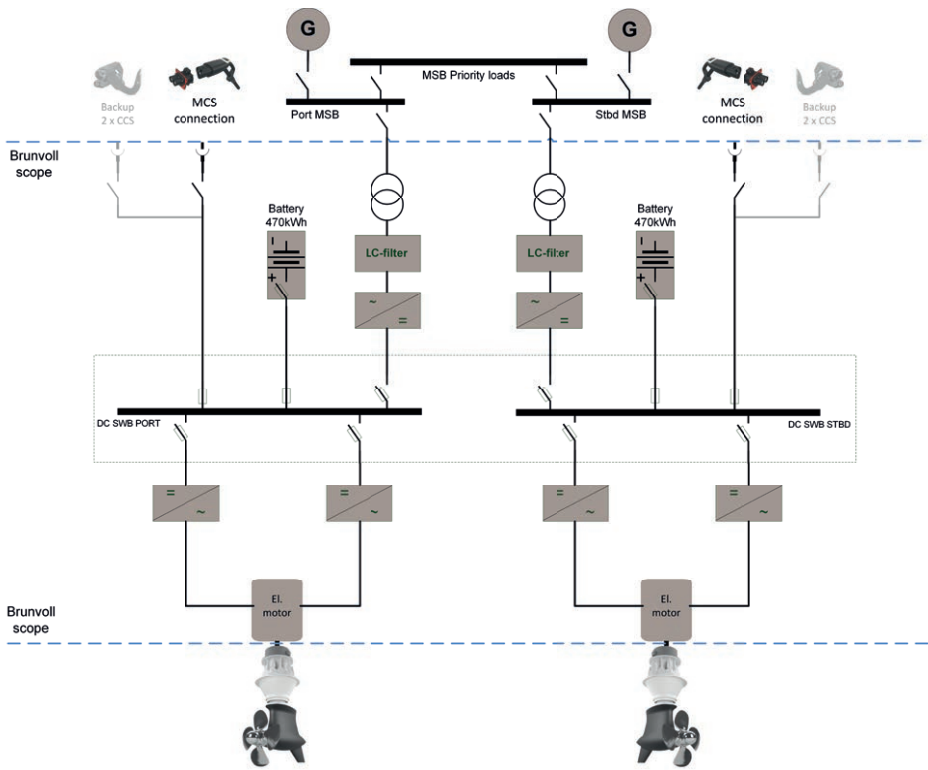
BRUNVOLL SCOPE OF SUPPLY	VESSEL PARTICULARS
2 x 1100kW EI-motors	Owner The Fjords
Interface to 2200kWh Battery System	Yard Br.Aa
Triton CPP	Designer Br.Aa - Seasight Design
Triton EMS, Energy Management	System Class DNV
Propulsion Inverters	Year Built 2026
Dual DC Grid	
DC Shore Connection	
Battery System	
Propulsion Motors	
IAS System, AC Grid Inverters incl. AC Chargeer	



«Rygerbuen» Car Ferry



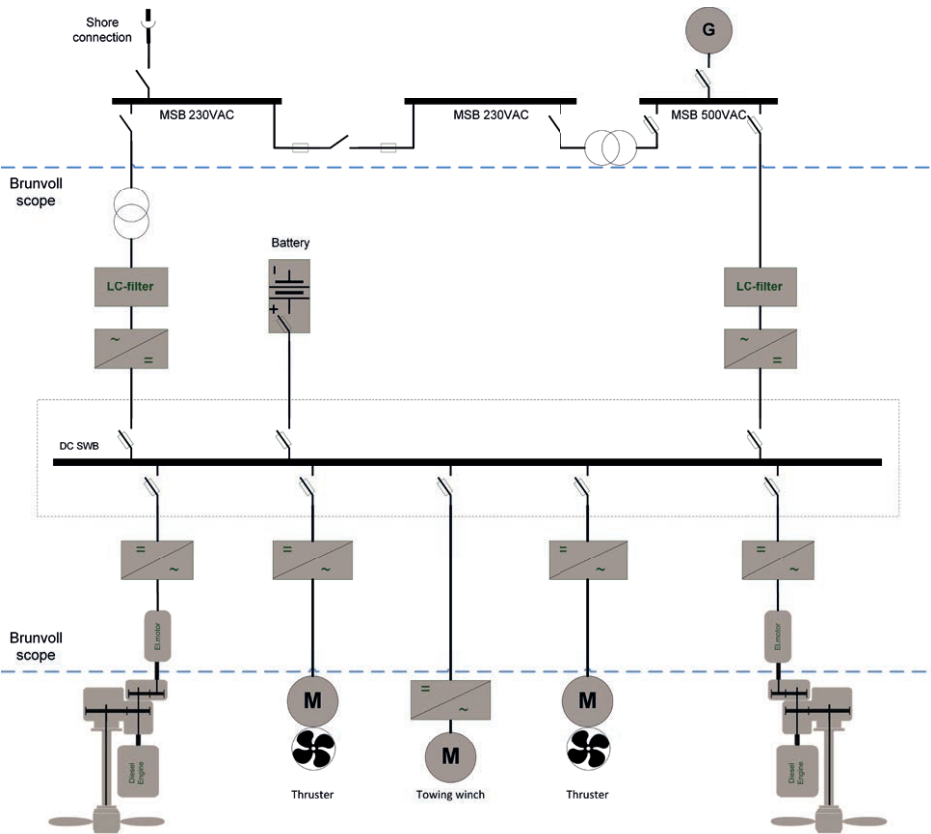
BRUNVOLL SCOPE OF SUPPLY	VESSEL PARTICULARS
Battery System 940 kW	Owner Rødne
Triton EMS, Energy Management	Yard Smögen Plåt & Svetsindustri
Triton EMS Inverters & DC Switchboards	Designer
EI-motors 331kW	System Class DNV
Charging system CCS and MCS	Year Built 1998 / Rebuilt 2024
	IMO 9197090



«RS (NB137 - TBN)» SAR Vessel



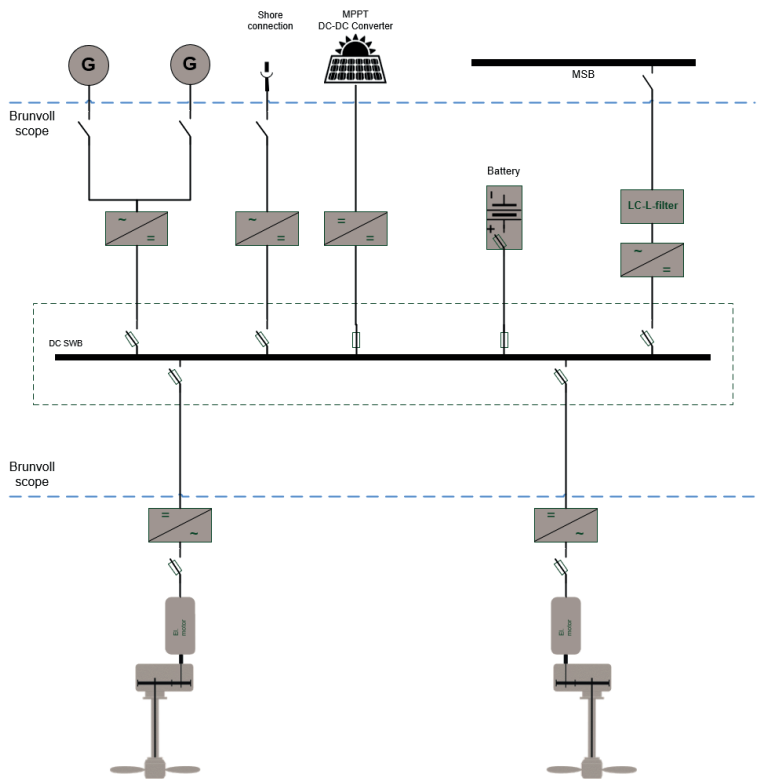
BRUNVOLL SCOPE OF SUPPLY	VESSEL PARTICULARS
Triton CPP - Propulsion Control, Triton FPT - Thruster Control	Owner Redningsselskapet
Triton SG - Steering Gear complete	Yard GOT Marine AS
Brunvoll Dynamic Positioning System (DP-0)	Designer Naval Dynamic
Triton EMS - Energy Management System	System Class TBN
Triton Hybrid - DC-Switchboard	Year Built 2025
Battery System	



«Serenity Yachts» TBN



BRUNVOLL SCOPE OF SUPPLY	VESSEL PARTICULARS
Triton FPP – Propulsion Control	Owner NA
Hybrid system integration incl;	Yard Serenity Yachts
Triton EMS – Energy Management System, DC Grid	Designer Serenity Yachts
Solar Panel Converter	System Class TBN
Battery system	Year Built 2025
Propulsion motors	
AC grid Inverter	
Shore Inverter	
Generator Inverter	



Benefits of a Hybrid Propulsion System

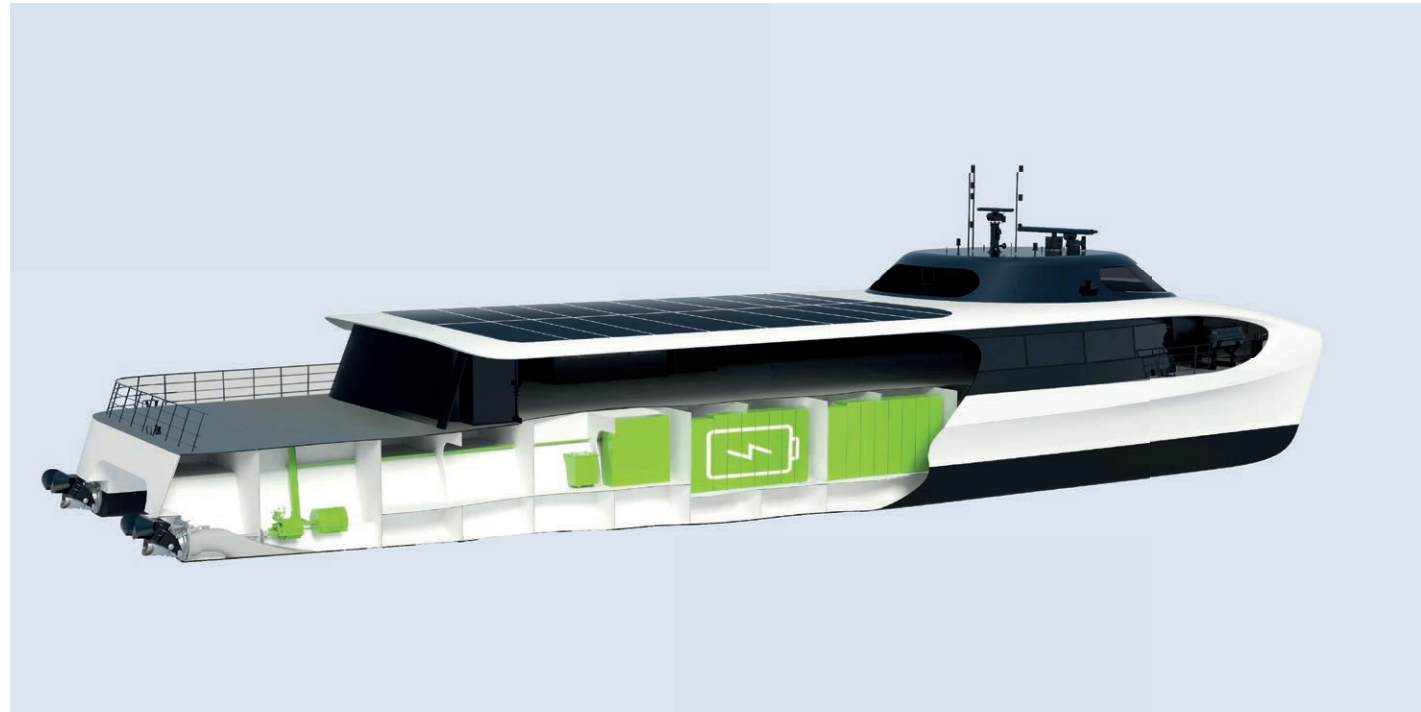


Illustration: Br. Aa. Aero Design - Fjord1/Knarvik High Speed Passenger Vessel

Hybrid propulsion systems benefit of the best from two systems - the combination of electric propulsion and diesel drive.

The Hybrid system configuration is a fuel efficient and flexible system.

The system configuration may consist of various components depending on the vessel type and operation profile. Brunvoll has a wide range of configurations to meet the market demands.

The system is ideal for operations in areas with requirements for low noise and reduced local emissions, such as harbours and protected areas.

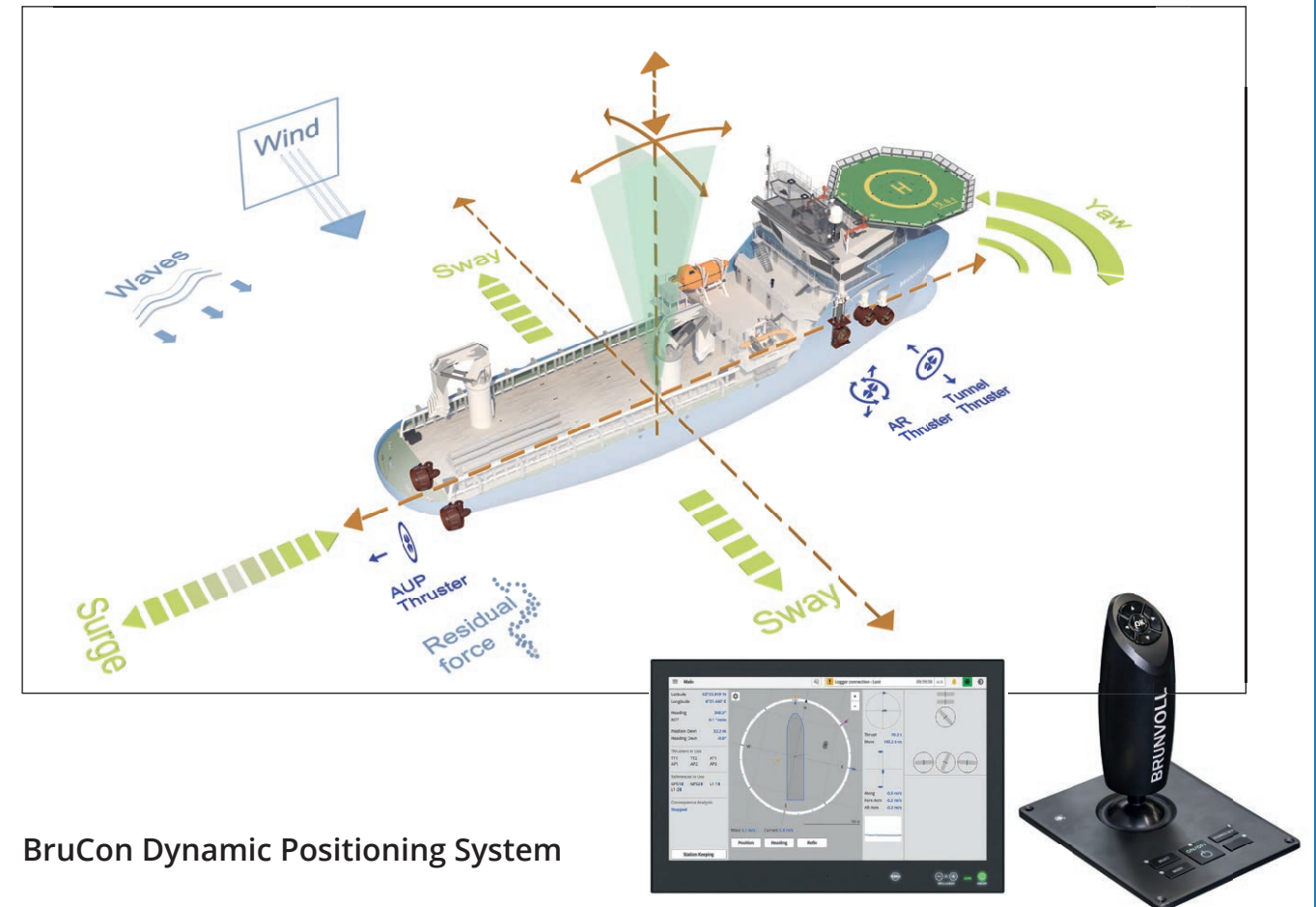
Brunvoll - your preferred System Integrator

Brunvoll specializes in compact and light weight hybrid solutions, taking the full responsibility of the system integration.

The wide range of different workboats and passenger vessels, require unique knowledge about the challenges.

Our wide range of system configurations consists of a hybrid package for propulsion with hotel load supply and standardised charging solutions on shore.

An integrated system design with focus on control philosophy, fuel savings and easy operation.



BruCon Dynamic Positioning System

Efficient and Intelligent Control

BruCon DP optimizes thrusters, propulsion, and rudder control for precise and efficient maneuvering.

Developed in-house, it enhances vessel performance, simplifies maintenance, and improves reliability with standardized off-the-shelf hardware, ensuring cost-effective and dependable operation.

Seamless Integration & User-Friendly Operation

The system interfaces effortlessly with all relevant sensors and positioning systems, offering an intuitive user interface adaptable to compact and full-size operator stations, as well as operator chairs.

Part of the same product family, BruCon JS (Joystick System) functions either as a standalone system or as an independent joystick within a classed DP system, ensuring flexibility for various operational needs.

Optimized Performance & Energy Efficiency

Designed for all vessel types, BruCon DP and JS prioritize user experience and efficiency. Key benefits include:

- Intuitive Operation – Low user threshold with a streamlined interface.
- Enhanced Model-Based Estimation– Nonlinear observers boost robustness and accelerate convergence.
- Energy Optimization – Intelligent thruster allocation reduces consumption, wear, and tear.
- Advanced Simulation – Cutting-edge modeling minimizes sea trial time and enhances performance.

SELECTED REFERENCES



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