

SELECTED REFERENCES



ELECTRIC AND HYBRID
PROPULSION SYSTEM INTEGRATION

BRUNVOLL
PRECISION IS OUR PASSION

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

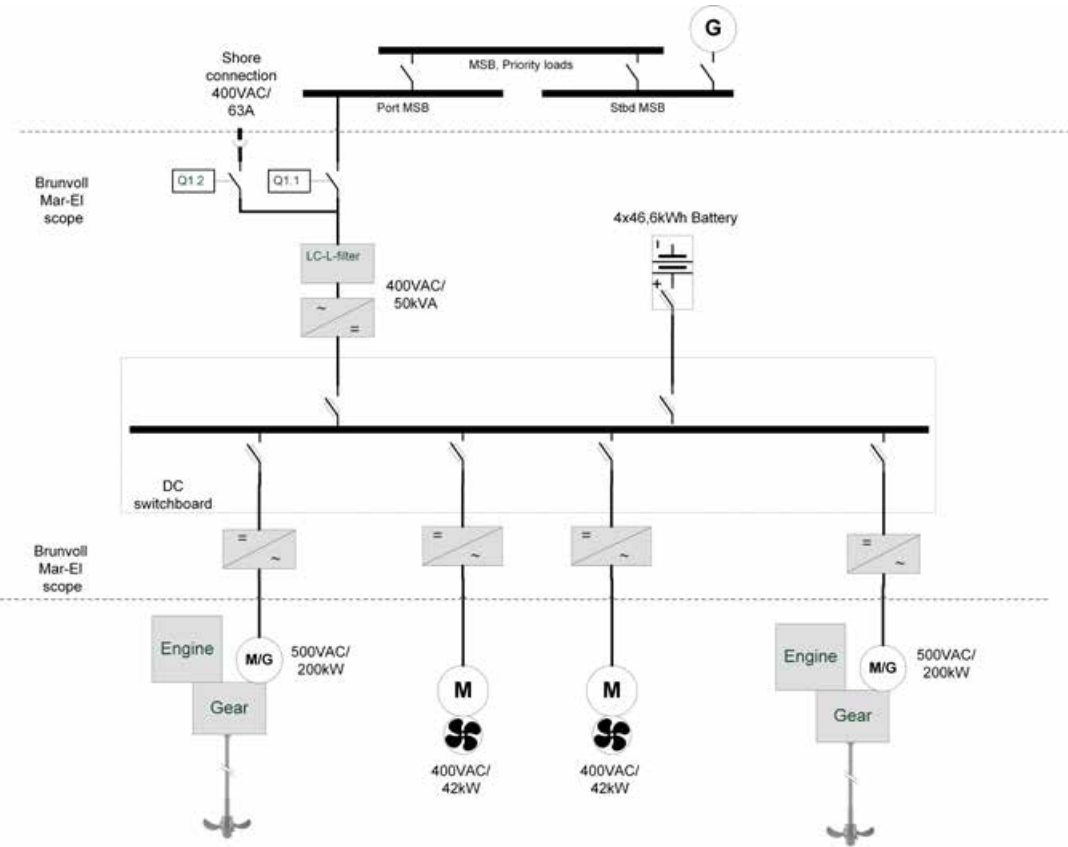
Charging from Hotel Grid (I.E shore connection / aux genset)

DC Charging from CCS fast charging system

«HST Ella» 24m CTV



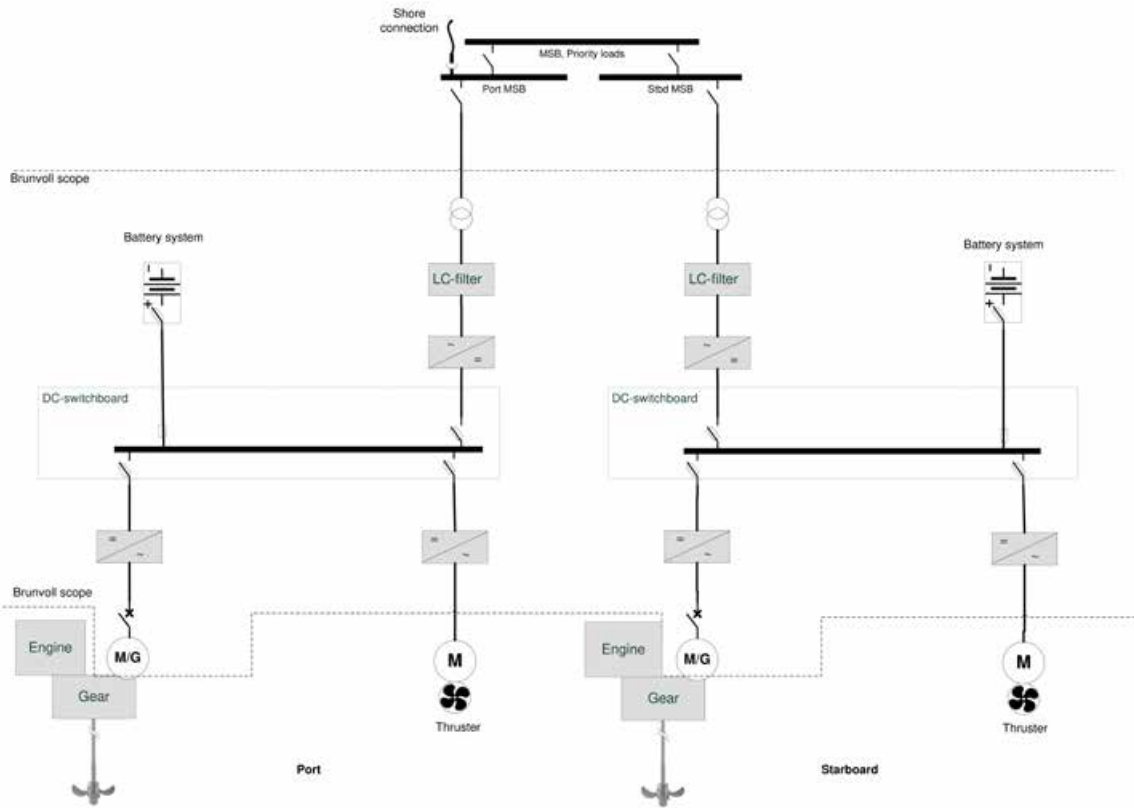
BRUNVOLL SCOPE OF SUPPLY		VESSEL PARTICULARS	
Triton CPP, Propulsion Control System		Owner	High Speed Transfer
Triton EMS, Energy Management System		Yard	Diverse Marine
Triton SG, Steering Gear System		Designer	Chartwell Marine
Triton JS, Joystick System		Class	BV
Inverters & DC Switchboards		Year Built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



OCEA (TBN) 26m CTV



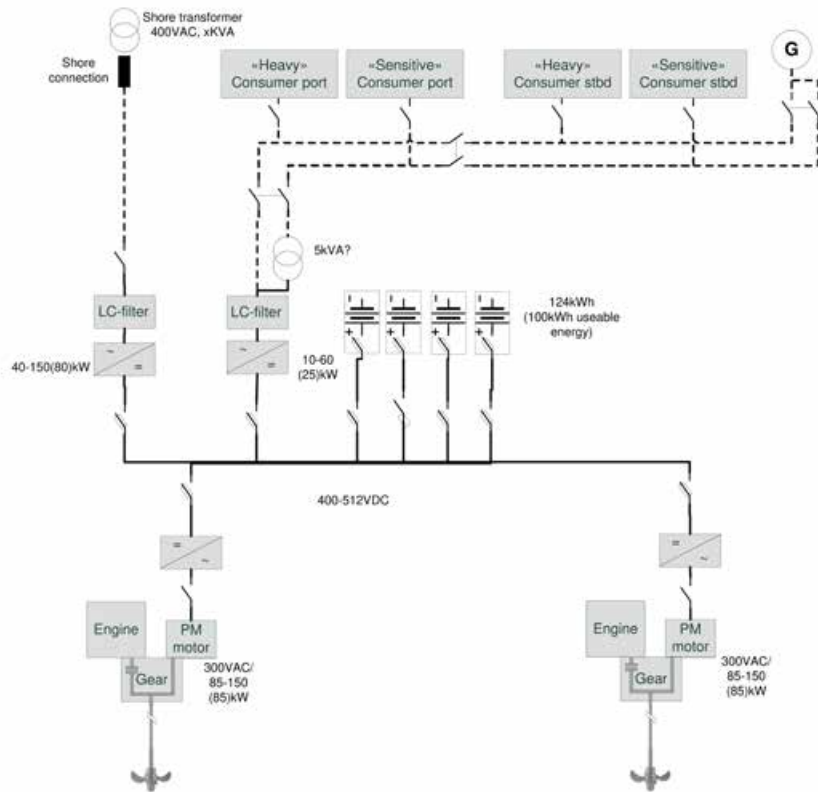
BRUNVOLL SCOPE OF SUPPLY	VESSEL PARTICULARS	
2x90 kW EI-motor	Owner	LD Tide
186kWh Battery System	Yard	OCEA SA
Triton CPP, Propulsion Control System	Designer	Mauric
Triton EMS, Energy Management System	Class	BV
Inverters & DC Switchboards	Year Built	2021



«Fjordled» 24m Passenger Catamaran



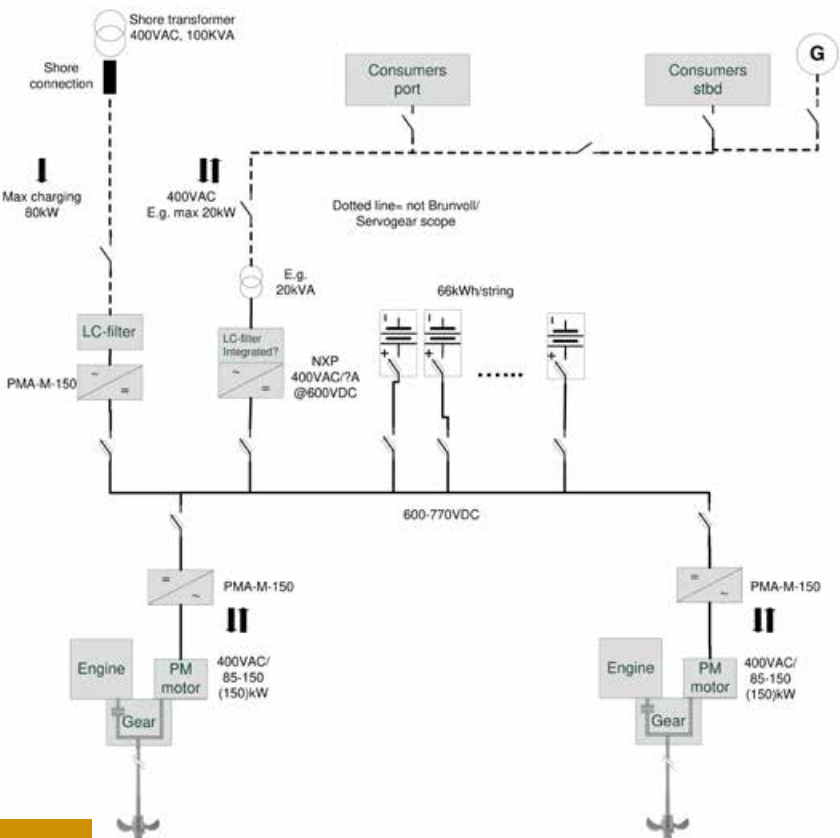
BRUNVOLL SCOPE OF SUPPLY	VESSEL PARTICULARS	
140kWh Battery System	Owner	Norled AS
Triton CPP, Propulsion Control System	Yard	GS Marine
Triton EMS, Energy Management System	Designer	Ingebjørn Aasheim Ship Design
Triton SG, Steering Gear System	Class	DNV
Triton JS, Joystick System	Year Built	2018
Triton CHR, Manoeuvre Chair		
Inverters & DC Switchboards		



«Brim» 24m Sightseeing Vessel



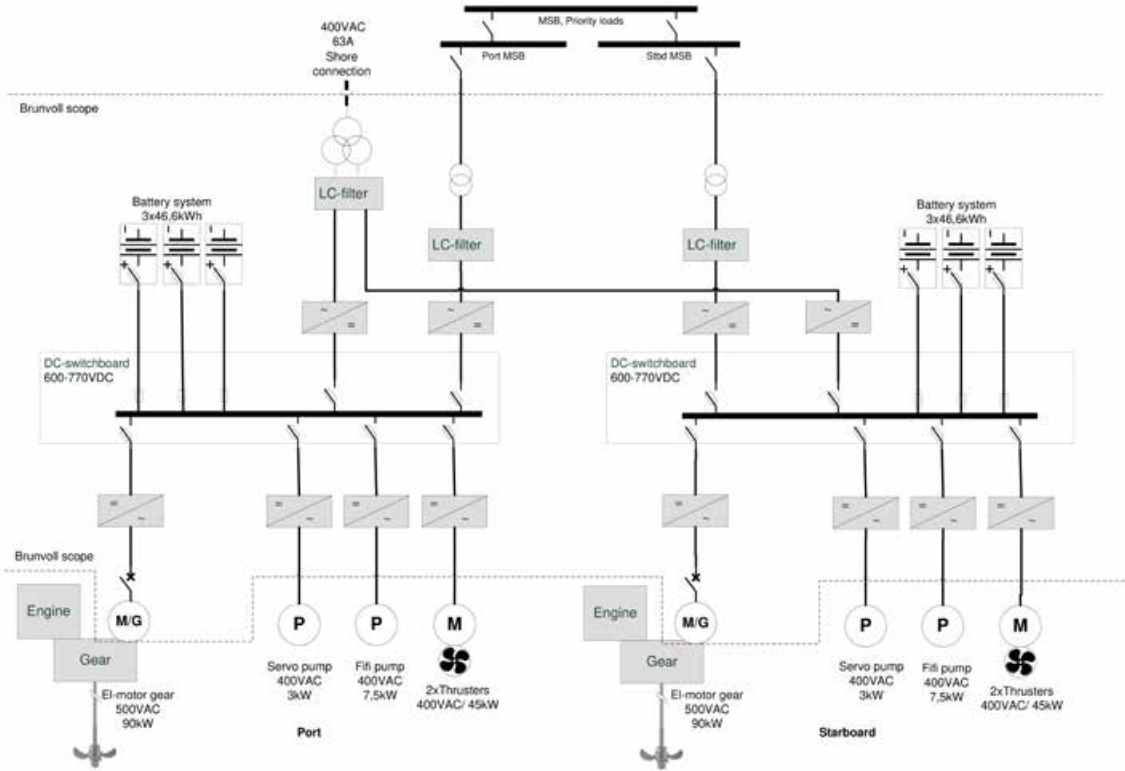
BRUNVOLL SCOPE OF SUPPLY	VESSEL PARTICULARS
796 kWh Battery System	Owner Brim Holding AS
Triton CPP, Propulsion Control System	Yard Maritime Partner AS
Triton EMS, Energy Management System	Designer Wave Propulsion AS
Triton SG, Steering Gear System	Class DNV
Triton JS, Joystick System	Year Built 2019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



«Erla Kongsdottir» 27m Passenger Catamaran



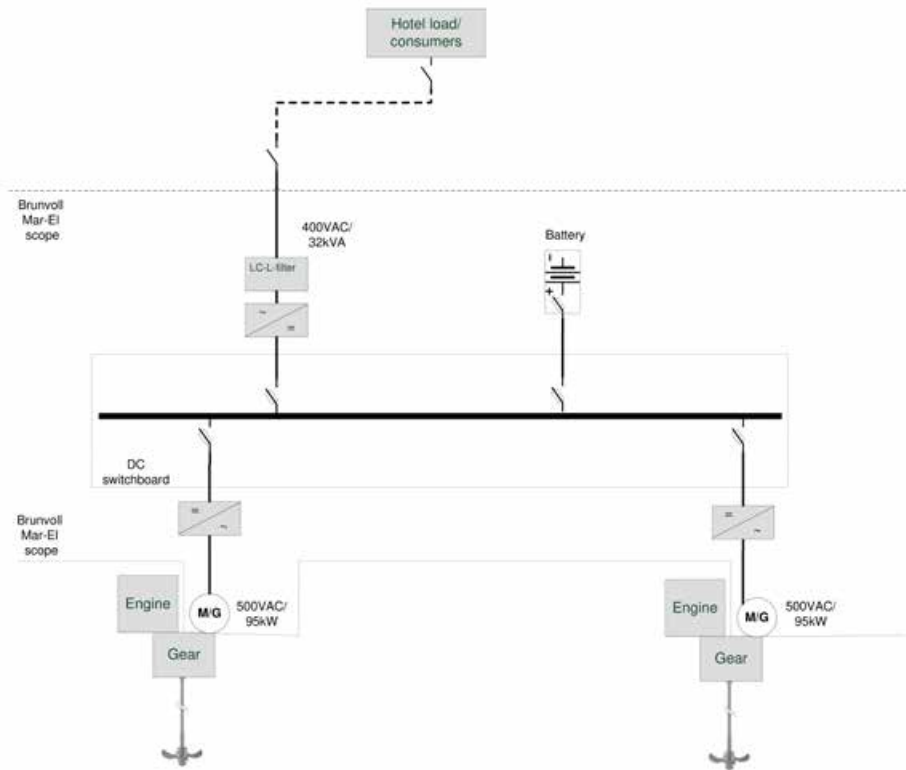
BRUNVOLL SCOPE OF SUPPLY	VESSEL PARTICULARS
2x90kW EI-motors	Owner Strandfaraskip Landsins
220 kWh Battery System	Yard GS Marine AS
Triton CPP, Propulsion Control System	Designer Ingebjørn Aasheim Ship Design
Triton EMS, Energy Management System	Class DNV
Triton PMS, Power Management System	Year Built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



Kewatec (TBN) 23m Research Vessel



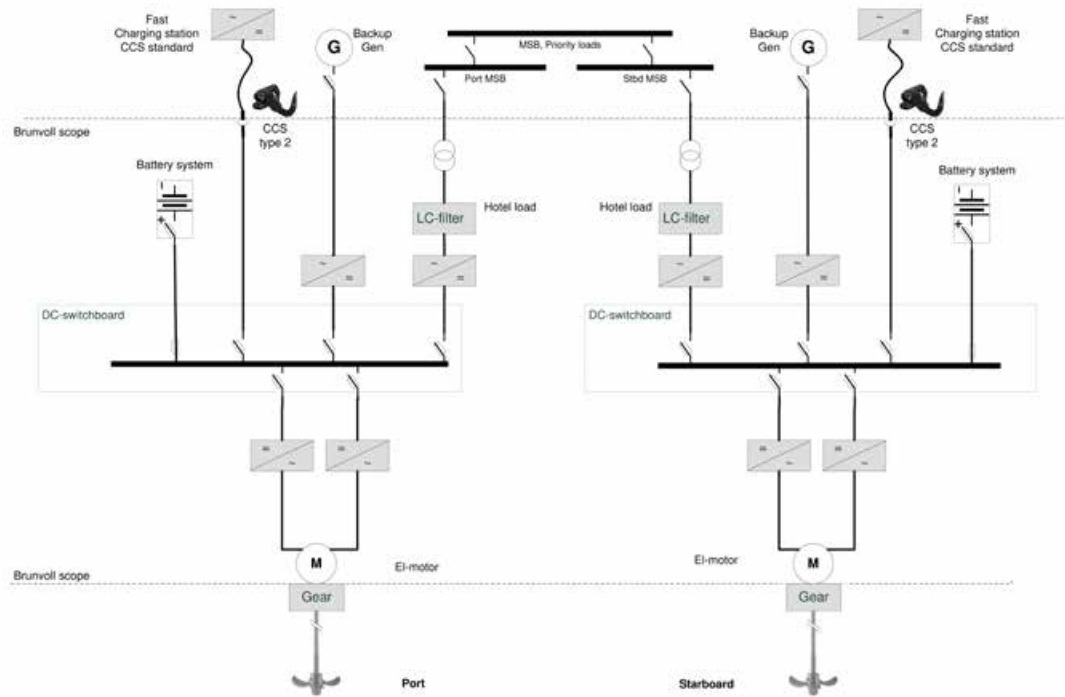
BRUNVOLL SCOPE OF SUPPLY	VESSEL PARTICULARS
2x60 kW EI-motors	Owner NGU
233kWh Battery System	Yard Kewatec OY
Triton CPP, Propulsion Control System	Designer Kewatec OY
Triton EMS, Energy Management System	Class DNV
Triton SG, Steering Gear System	Year Built 2022
Inverters & DC Switchboards	



«Fjordøy» 24m Passenger Catamaran



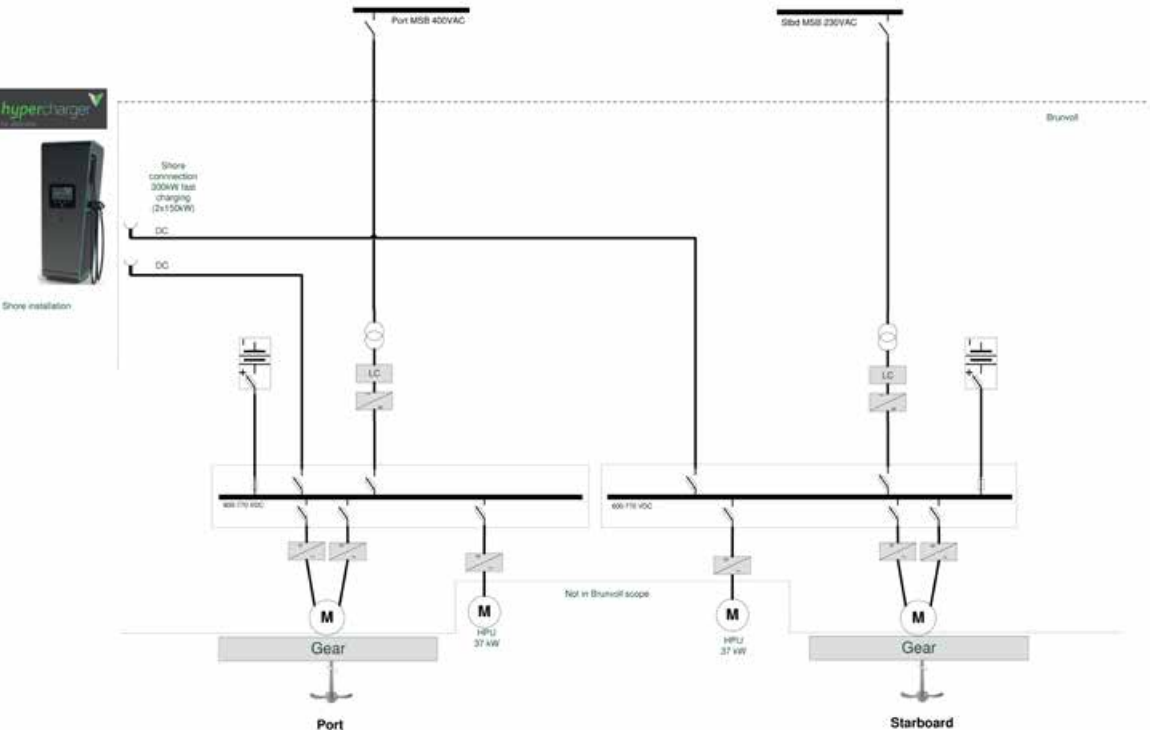
BRUNVOLL SCOPE OF SUPPLY	VESSEL PARTICULARS
2x400kW EI-motors	Owner Norled AS
1584kWh Battery System	Yard GS Marine
Triton CPP, Propulsion Control System	Designer Ingebjørn Aasheim Ship Design
Triton EMS, Energy Management System	Class DNV
Triton SG, Steering Gear System	Year Built 2018
Triton JS, Joystick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



Mest (TBN) 14,9m Fish Farm Service Vessel



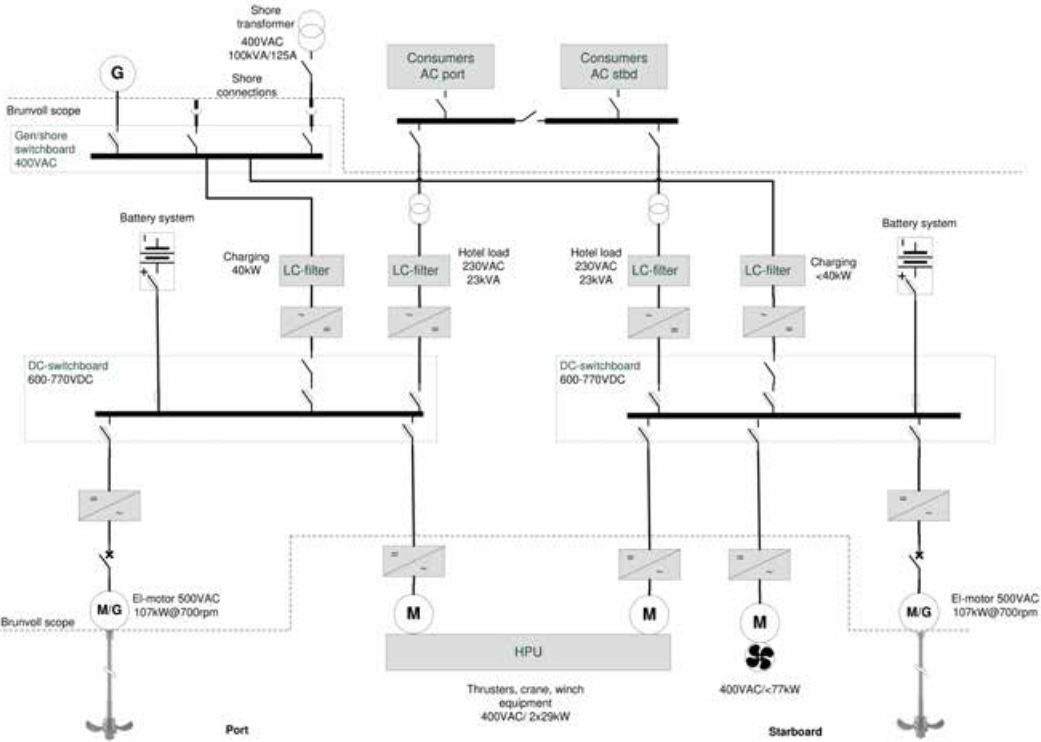
BRUNVOLL SCOPE OF SUPPLY	VESSEL PARTICULARS
2x250kW EI-motors	Owner P/F Bakkafrøst
1055kWh Battery System	Yard MEST Shipyard P/F
Triton CPP, Propulsion Control System	Design MEST 1508WB
Triton EMS, Energy Management System	Class Faroese Maritime Authority, FMA
Inverters & DC Switchboards	Year Built 2021



«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	



SELECTED REFERENCES



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