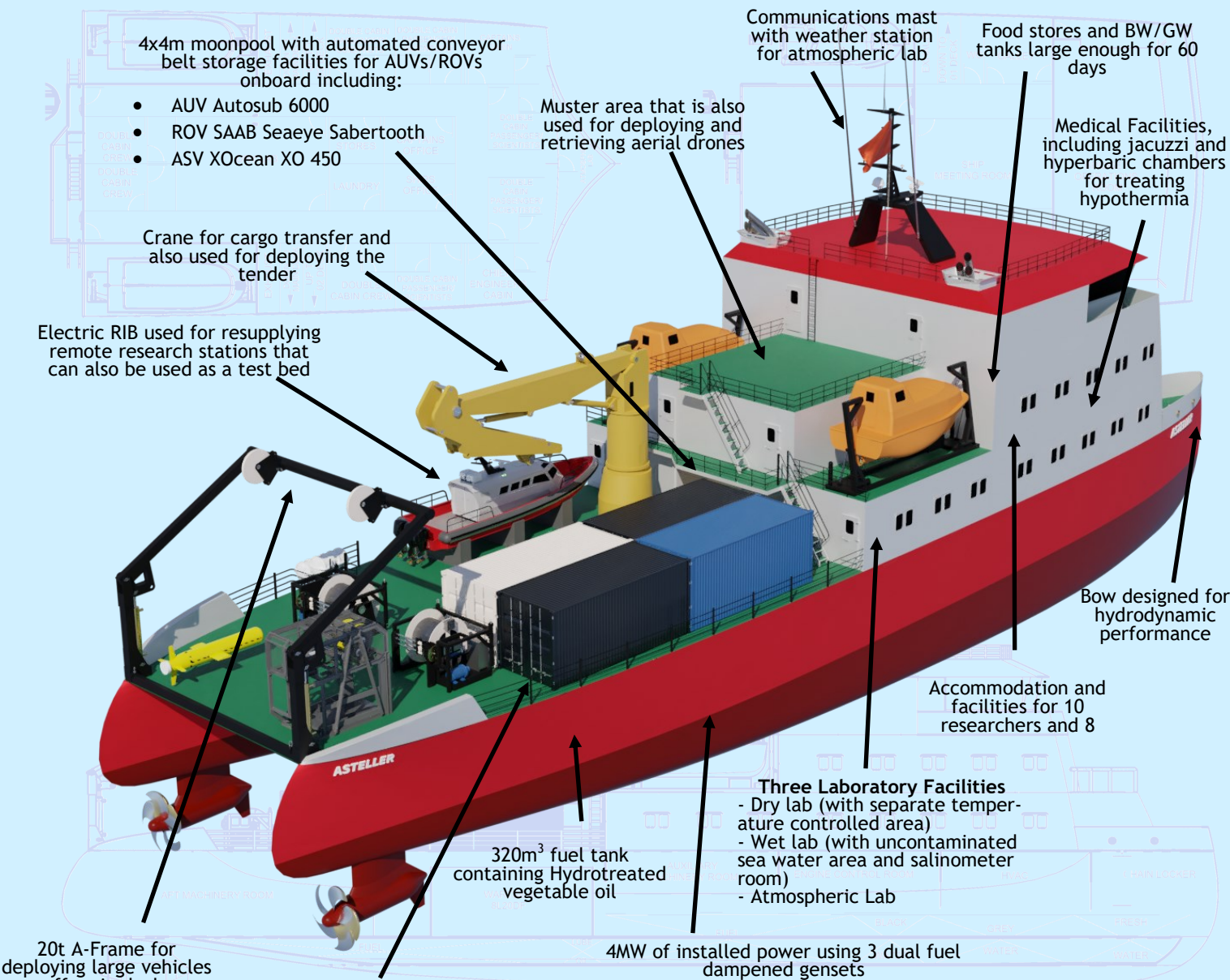
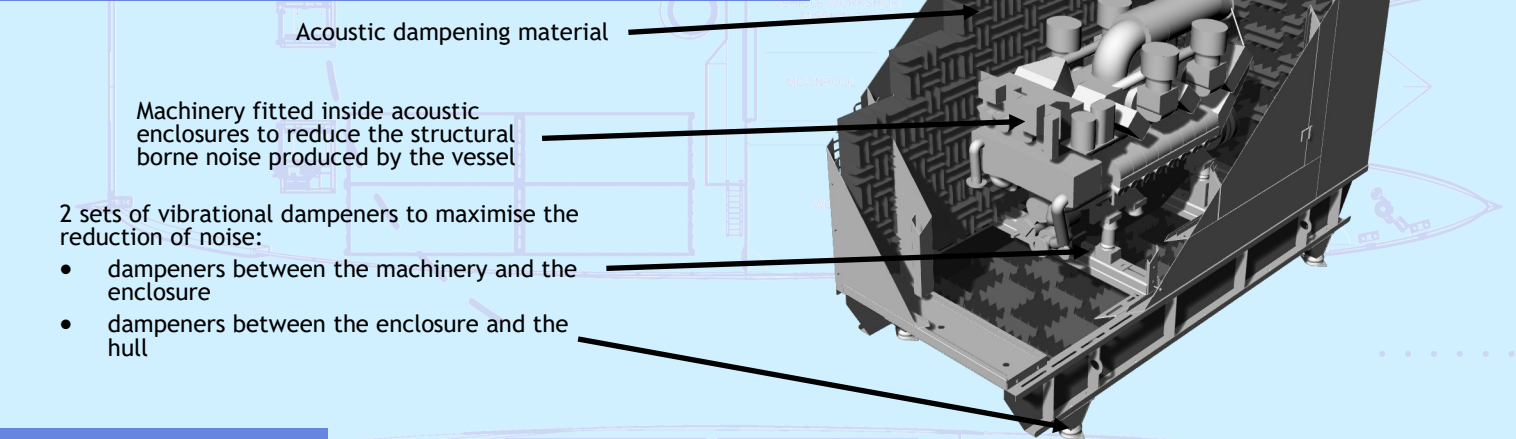


FLEXIBILITY IS THE FUTURE DESIGN REQUIREMENT

IMO POLAR CLASS B | DNV CLASS SILENT-R | IMO TIER III EMISSIONS | EU STAGE V EMISSIONS



MACHINERY ACOUSTIC ENCLOSURE



PROPULSION

Dual-Fuel Electric Propulsion System

- Fuel Flexibility
- 95% Overall Efficiency
- Flexible Machinery Arrangement
- Reduced Underwater Radiated Noise
- Reduced Fuel Consumption and Emissions
- Future Proof DC Power Generation Backbone (Siemens SiSHIP Blue Drive Plus C)
- 4.8 MW Battery Capacity

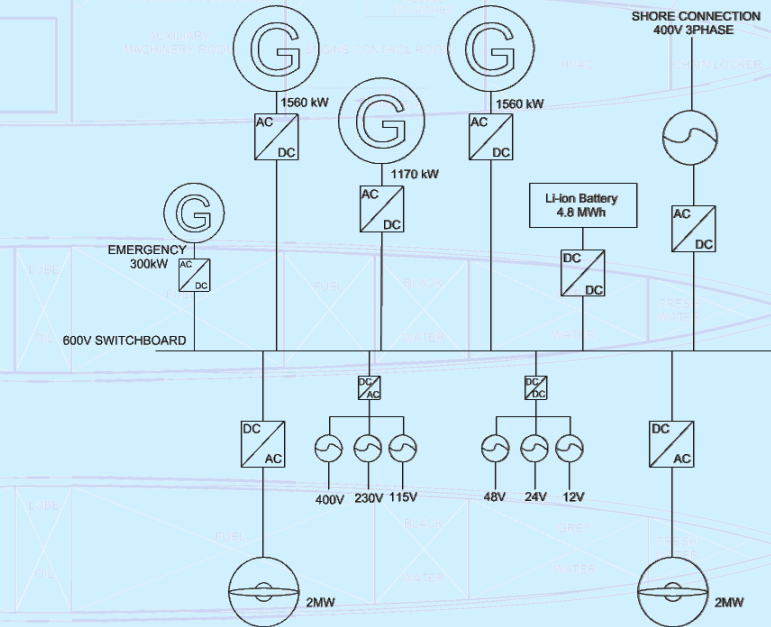
4MW Installed Power  
X2 Wärtsilä 8L20DF (1560 kW)  
X1 Wärtsilä 6L20DF (1170 kW)  
Fitted SCR with integrated silencer and DPF

Electric drive ICE class podded propulsors

- X2 ABB ICE Azipod (2MW)
- Maximum torque at low speed
- Enhanced manoeuvrability and dynamic positioning capabilities
- Robust mechanical design due to short shaft and absence of bevel gears
- High efficiency in both openwater and ice transit.
- PC6 Ice class—IMO B Equivalent

Emergency generator  
Cummins KTA19-D (300kW)

Fuel Type: Hydrotreated Vegetable Oil



Propulsion Schematic

Principle Particulars	
Length (m)	50.0
Breadth (m)	13.5
Draught (m)	3.0
Displacement (tonnes)	1050
Design Speed Openwater (kts)	15
Max Speed Openwater (kts)	20
Endurance (days)	60
Range (nm)	8000
Deck Area (m <sup>2</sup> )	650
Crew (Inc trained medic)	8
Researchers	10

CAPABILITIES

ENVIRONMENTAL RESEARCH

Research Fields include;

- Underwater radiated noise (URN)
- Seabed topography and composition
- Marine mammal communication frequencies
- Marine mammal habitats
- Atmospheric composition

Vessel Outfit

- Wet, dry and atmospheric labs all fitted with separate HVAC systems for bacteria control
- 4x4m moonpool for deploying ROVs and divers in hot suits for underwater surveys
- 20t A-frame for launching large AUVs and ASVs
- UAV capture system for Hydrone (Uni of Strathclyde)
- Hydrophones, sonar and echosounders fitted to the hull for URN readings

TECHNOLOGY TEST BED

- Marine coating analysis using TAS Global Hull cleaning robot
- Investigation of ice-propeller interaction to aid propeller design

ICE TRANSIT

Designed to IMO Polar Class B—transit in thin first year ice (30-70cm) and old ice inclusions up to 3m or more)

- Installed power sufficient for 5knot transit in brash ice
- 0.76m double bottom separates tanks from outer shell
- Strengthened structure within the vessel ice belt, with structural health monitoring in critical ice impact areas; bow and propeller blades.
- Aluminium construction to eliminate hull embrittlement.
- Emergency Response.
  - 120-hour emergency power supply
  - 2X 27 person closed type lifeboats
  - 20X immersion suits and thermal protection aids
- Trace heating on navigation, steering, propulsion, anchoring, fire suppression and lifesaving systems.
- Tank heating coils for all tanks above the lower ice waterline and/or adjacent to the side shell.
- Saltwater cooling water discharged into shallow sea chest to prevent ice entering the system.

SILENT OPERATION

Hydrodynamic design

- InterSleek 1100SR Biocide-free hull coating
- Regular at sea hull and propeller cleaning
  - TAS Global Robotic

Machinery design

- Double damped engine configuration with acoustic enclosure
- No gearbox
- Propeller Boss Cap Fins
- Treatment of piping systems using hydraulic silencers, flexible hoses and resilient attachments to ships structure

ZERO/LOW EMISSION OPERATION

- Full Electric Survey mode
- 90% reduction in Net CO<sub>2</sub> emissions
- Reduced NO<sub>x</sub>, PM/Soot, CO and Zero SO<sub>x</sub> emissions
- SEEMP and crew training to manage installed power effectively.
- UV light used in sewage treatment and desalination plant to remove the risk of harmful chemicals being spilt into the environment
- Saltwater cooling system designed with bypass chiller circuit to reduce energy requirements.
- Variable speed pumps utilized to decrease power consumption and operational efficiency.
- Energy transfer HVAC/ventilation system to reduce fuel consumption.
- Non-toxic powder and water mist fire suppression.
- Engine heat recovery system
- BW and GW tanks sized for zero-discharge
- Silicon based power converters/inverters with lower cooling demands.