



ALASKA MARINE HIGHWAY SYSTEM

2024 SOUTHEAST CONFERENCE
MIDSEASON SUMMIT

February 2024



RELIABILITY



- Fleet Replacement Plan
- Vessel Management System with a Computer Maintenance Management System (CMMS)
- Starlink – Vessels need connectivity
- Installed servers on each vessel for the Vessel Management System
- AMOS – Implementation of one module at a time
 - Preventative Maintenance module installed in January
 - Compliance
 - Project Management module for dry-dockings
- Shipyard Pre-Planning Processes
- Written Shipyard Specifications
- Goal: shorter overhauls, lower cost and more in service days



EXISTING FLEET UPGRADE PROJECTS

- **Tazlina** – Addition of Crews Quarters: 2024
- **Columbia** – Upgrade Controllable Pitch Propellers: 2025
- **Kennicott** – EPA Required Emission Upgrade: 2025
- **Matanuska** – Regulatory safety required improvements: TBD



PLANNED TERMINAL PROJECTS

- Cordova Terminal Upgrade – 2024-2025
- Tatitlik Terminal Upgrade – 2026
- Chenega Terminal Upgrade – 2025-2026
- Auke Bay East Berth Upgrade - 2025
- Pelican New Terminal – 2026
- Angoon Terminal Upgrade – 2026
- Kake Terminal Upgrade – 2026
- Saxman New Terminal for Annette Island- TBD

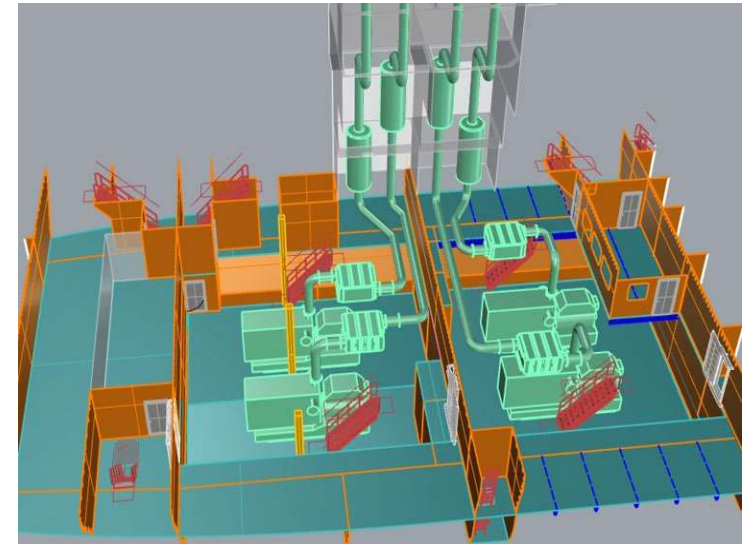




NEW VESSEL PLANS

Tustumena Replacement Vessel

- Construction RFP --- soon
- ## Mainliner Replacement Vessel – 2024 Design
- ## Hybrid No-Low Emissions Ferry – 2024 Design

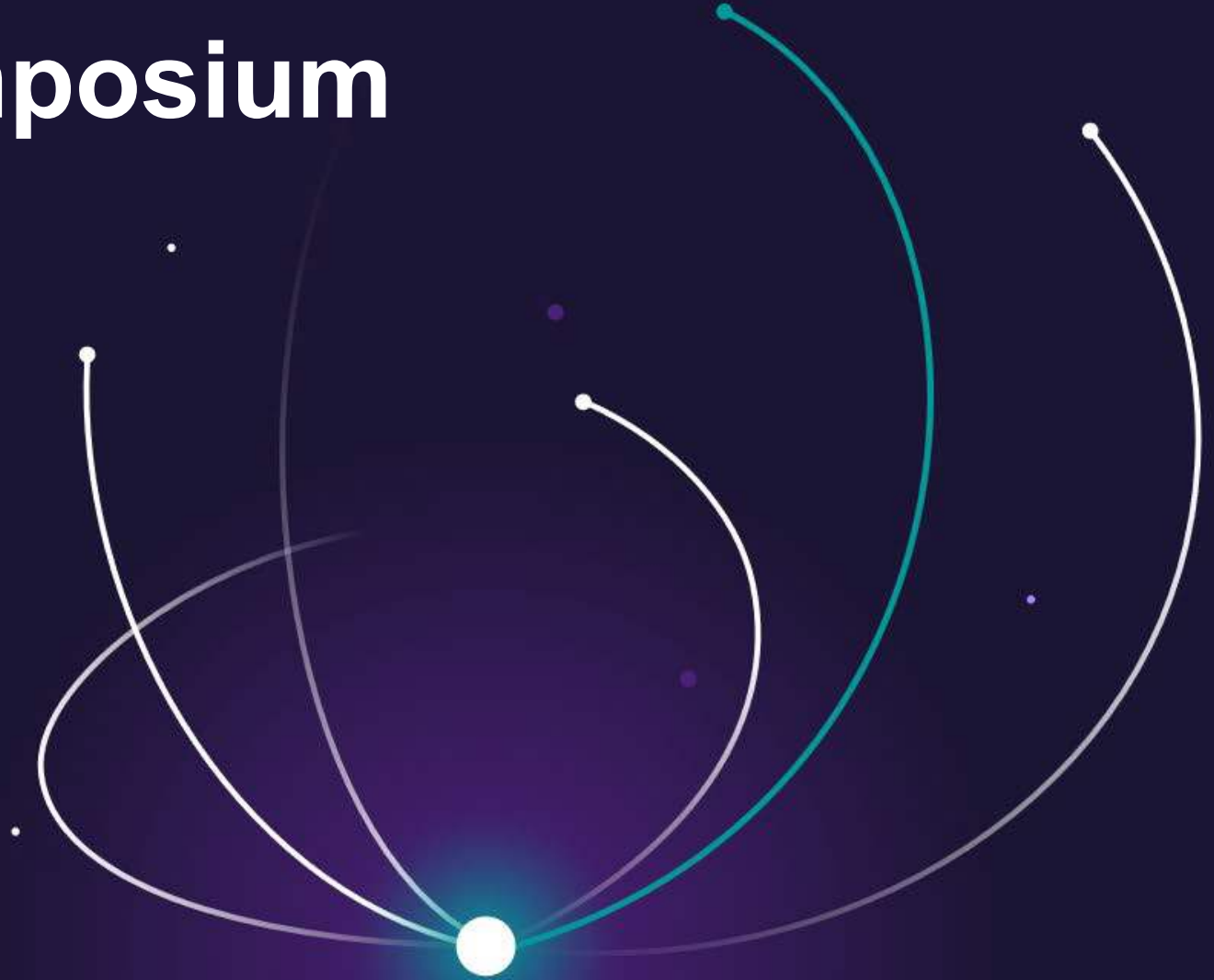


2024 Alaska Southeast Conference Transportation Symposium

SIEMENS
energy

Tustumena Replacement Vessel Update
Siemens Energy NO-LO Projects

Siemens Energy Maritime & Offshore
January 8th, 2024 – Juneau, AK



Agenda



Topic	Presenter	Information / decision / action	Action time
AMHS Tustumena Replacement Vessel	Barrett Carpenter	Team, Design, Scope of Supply	8'
No Emissions/Lo Emissions Vessels	Barrett Carpenter	Siemens Energy Project References	2'

Tustumena Replacement Vessel (TRV) Design and Construction Team



Vessel Designer/Naval Architect



Vessel Power & Propulsion
Systems Integrator



Vessel Elevator & Turntable
Systems Integrator



Vessel Construction Shipyard

To be announced soon!

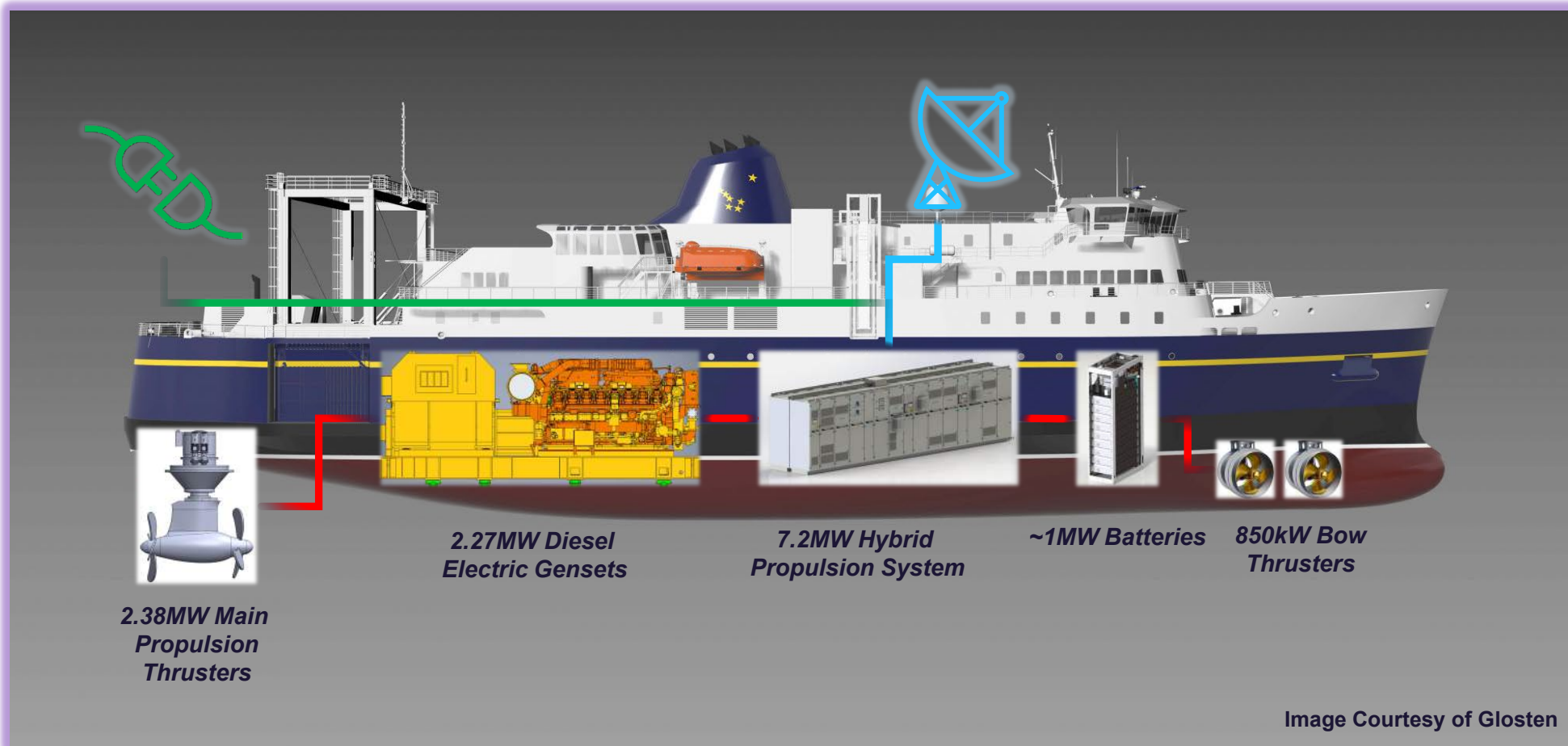
TRV – Design Basics



General Particulars	Previous TRV Design	Current TRV Design	Change
Length Overall (LOA)	330'-0"	330'-0"	No Change
Waterline Length (LWL)	311'-0"	325'-4"	14'-4"
Beam	71'-0"	74'-0"	3'-0"
Draft	15'-10"	15'-10"	No Change
Air Draft	90'-0"	90'-0"	No Change
Full Displacement (16'-6" Draft)	5,550 LT	5,680 LT	130 LT
Service Speed (knots)	15.0 kts	15.0 kts	No Change
Propulsion Power (BHP)	7,000 BHP	7,000 BHP	No Change
Passengers	250	250	No Change
Total Passenger Berths	104	126	22
Vehicle Lane Feet	1180'	1220'	40'
Vehicles	54	55	1
Vans	12	14	2
Vans & Vehicles	12 & 27	14 & 23	+2, -4



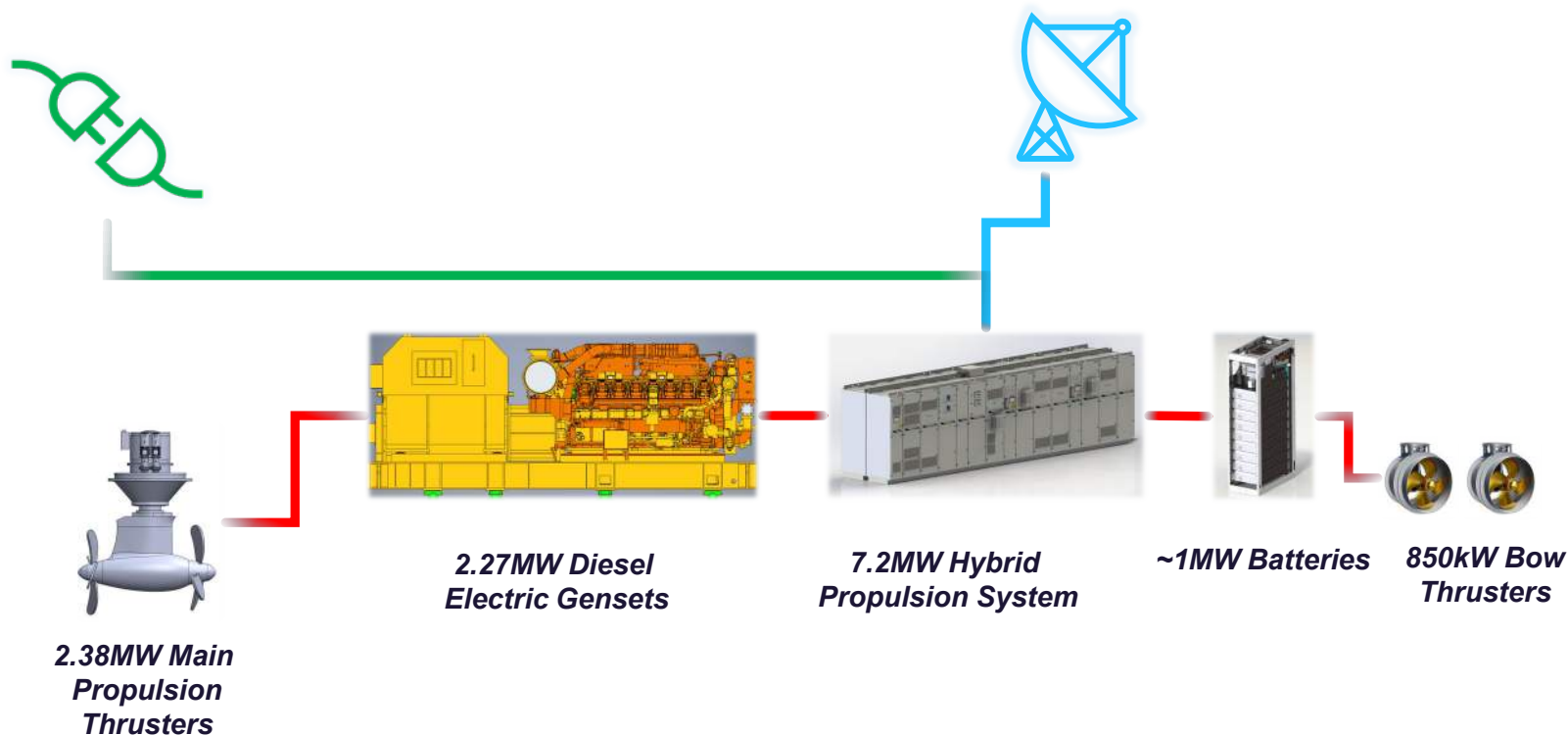
TRV – Siemens Energy Scope of Supply



Power & Propulsion Systems Integrator

- 2 x Main CRP Azimuth Thrusters
- 4 x Diesel Electric Gensets
- Siemens Energy BlueDrive PlusC™ Hybrid Propulsion System
- Siemens Energy BlueVault™ Battery Energy Storage System
- 2 x Bow Thrusters
- Siemens Energy EcoMAIN Blue™ Remote Monitoring System

- ✓ Maximum redundancy
- ✓ Maximum safety
- ✓ Maximum vessel availability



Design Goals

Vessel Safety and Availability

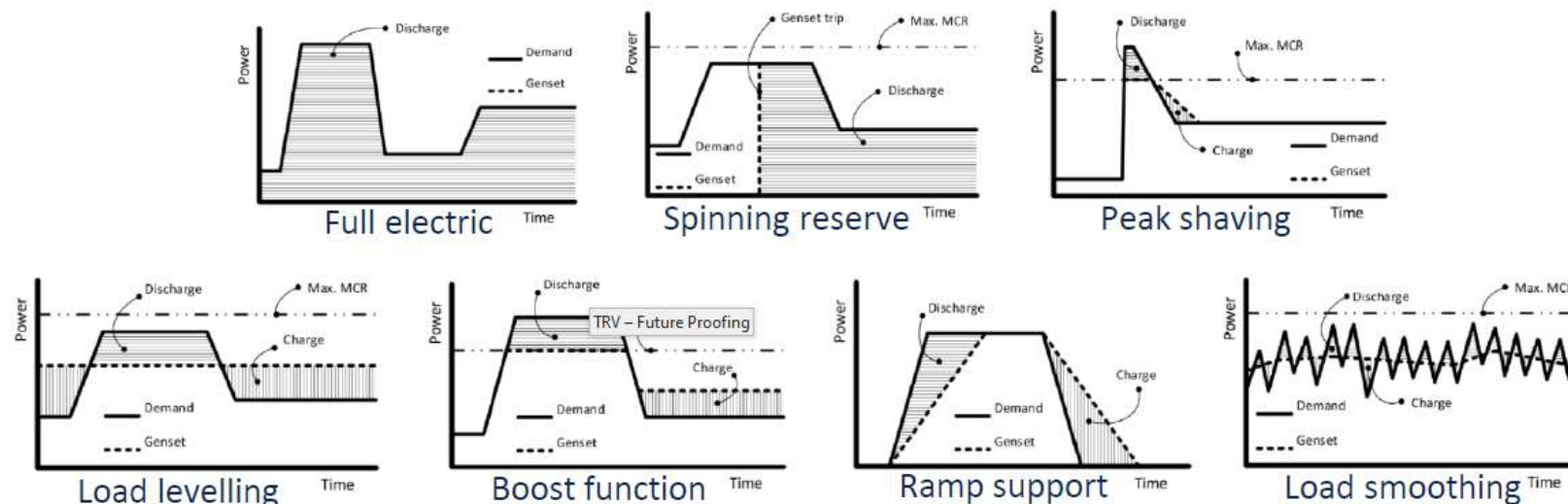
- (N+1) Redundancy = Full propulsion power on 3 of 4 gensets @ 90% MCR. Offline genset can be serviced/repaired underway.
- Battery ESS can act as 5th genset for .5 hours.
- Machinery condition-based monitoring and failure prediction for improved reliability.

Lower Emissions & Higher Quality of Life

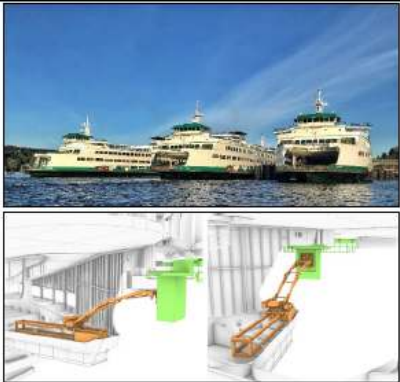
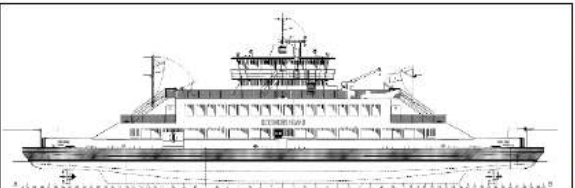
- Battery ESS can provide zero emissions arrival and departure from port. Additional peak shaving and fault ride-through capability.
- Shore power connections = cold ironing while in port.
- Variable speed gensets = lower noise and vibration.

Battery application

Batteries can be used for all different kinds of applications on board of ships. Not all ships can be fully powered by batteries, but every ship can benefit from installing a battery, creating a hybrid or plug-in hybrid system. This can be for zero-emission sailing, increasing the energy efficiency, or enhancing the performance of the ship.



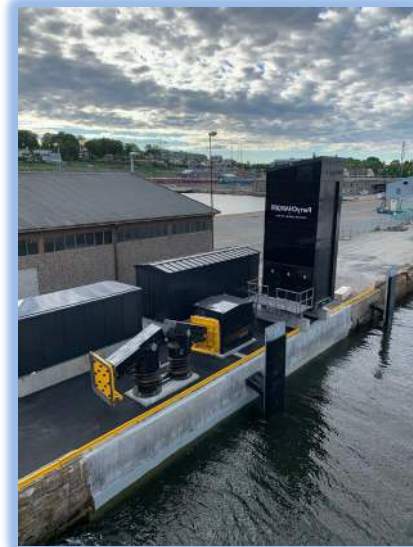
Siemens Energy NO-LO Reference Projects

TXDOT - Qty (3) Hybrid Galveston RO-PAX Ferry Siemens Energy was the Propulsion & Power Single Source Vendor/Integrator (LVDC Solution)		• Diesel electric propulsion Siemens Energy BlueDrive PLUSC™ with Energy Management System • Siemens Energy BlueVault™ BESS (2 x 772kWh per vessel) • 2 x 1850kW Motors • SWBDS and MCC's • Integrated Alarm and Monitoring System • Engineering, Integration Project Management, Commission and Sea Trial Support • Siemens Energy supplied storage container for spare BESS modules (with trickle charging, condition & remote monitoring)
Qty. (3) WSF Jumbo Mark II Hybridization Projects with WSF (Owner Furnished Equipment and Solution from Siemens Energy) Propulsion & Power Single Source Vendor/Integrator (LVDC Solution)		• BlueDrive™ LVDC Propulsion System conversion. • Install 2 x 2851kWhr BlueVault™ Battery Energy Storage Systems. • Integrate BlueVault™ ESS into the Siemens Energy power management system. • Preliminary design of Shore Power Battery Charging System. • Preliminary design of pantograph shore charging arm. • Engineering, Project Management, Commission and Sea Trial Support. • Siemens Energy supplied storage container for spare BESS modules (with trickle charging, condition & remote monitoring)
Qty (1) Trust of Governors Island Ferry new Build at CONRAD as Propulsion & Power Single Source Vendor/Integrator (LVDC Solution)		• BlueDrive Eco™ LVDC Propulsion System conversion. • Full electric ready when a shore charger is installed. • Energy Management System. • All AC auxiliary ship service and emergency switchboards, power distribution panels, and transformers. • 2 x 400kW BlueVault™ ESS • Alarm and monitoring. • Engineering, Project Management, Commission and Sea Trial Support.

Siemens Energy NO-LO Reference Projects



- ✓ Hybrid LH2 fuel cell / diesel electric
- ✓ BlueDrive PlusC™ LVDC propulsion plant
- ✓ 1.2MW of H2 fuel cells, LH2 storage systems
- ✓ 2 x 700kW Diesel Gensets
- ✓ 120kW BlueVault™ BESS
- ✓ 2 DAYS of ZERO Emissions Operations!!



- ✓ 23 Shore charging solutions
- ✓ 50 vessels with super charging capability
- ✓ Up 9.2MW/11kW connection plugs
- ✓ 8.6MWh Shore BESS

Siemens Energy Maritime North American Business Development Team



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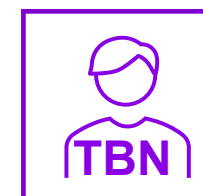
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To Be Named

**Business Development Manager
East Coast North America**



Thank you to all the conference attendees!



CREWING STATUS



AMHS Crewing Operations

As of January 26, 2024

Crew Status:			
	Currently Employed	Total Needed	Current Status
Wheelhouse*	71	79	-8
Master	See above wheelhouse totals		
Chief Mate	See above wheelhouse totals		
2nd Mate	See above wheelhouse totals		
3rd Mate	See above wheelhouse totals		
Cief Engineer	17	22	-5
1st Engineer	14	18	-4
2nd Engineer	13	18	-5
3rd Engineer	10	23	-13
Bosun	15	12	3
Able Bodied Seaman	58	62	-4
Ordinary Seaman	28	28	0
OSP	15	14	1
WM	18	18	0
Jr. Engineer	9	15	-6
Oiler	25	29	-4
Wiper**	14	5	9

NOTES:

*We are Short on licensed officers with pilotage. Need 27 more officers with full pilotage

**Extra Wipers used for developing our own Oilers and Jr Engineers since we can't hire them.

Steward positions not included as we are staffed with raw numbers, though this entry level pay position has a very high turnover rate, so recruiting is still a priority. Presently we are experiencing a shortage of cooks which is causing a gap in skilled workers and affecting operations.

RECRUITMENT & RETENTION

- **4th Quarter 2023 Recruitment Stats**
 - For the 4th quarter of 2023, we hired 32 and lost 12
- **Breaking the 4th quarter down by position:**
 - +3 Master Mates & Pilots (MM&P), hired 3 mates and lost 0
 - Total Marine Engineer Beneficial Association (MEBA) count remained the same with no new hires and no departures.
 - Total Inland Boatman Union (IBU) deck remained flat, hired 3 and lost 3.
 - Total IBU Engine remained the same, we hired 1 and lost 1.
 - +17 IBU Stewards, we hired 25 and lost 8.
- **Loosing ground with licensed positions. Total count for 2023 was:**
 - -3 MM&P, hired 8 and lost 11
 - New hire mates lack local pilotage. It takes a few years to acquire pilotage.
 - -2 MEBA, hired 4 and lost 6



RECRUITMENT EFFORTS

- Hiring a Crewing Manager
- Hired a recruiting position in January
- Attend Career Days at our national Maritime Academies
- Attend our coastal community High School Career Days
- MM&P assisting with AMHS Retirees coming back to work
- With DOLWD we are developing a program to introduce the marine industry as a career to our Alaska high school coastal communities
- Developing career pipeline paths to assist our crews with progressing upward
- AVTEC and University of Alaska Southeast providing training for our USCG required certifications



2045 Long Range Plan -

<https://dot.alaska.gov/amhs/operations/>

