San Francisco Bar Pilots
New High Speed Pilot Vessel Project

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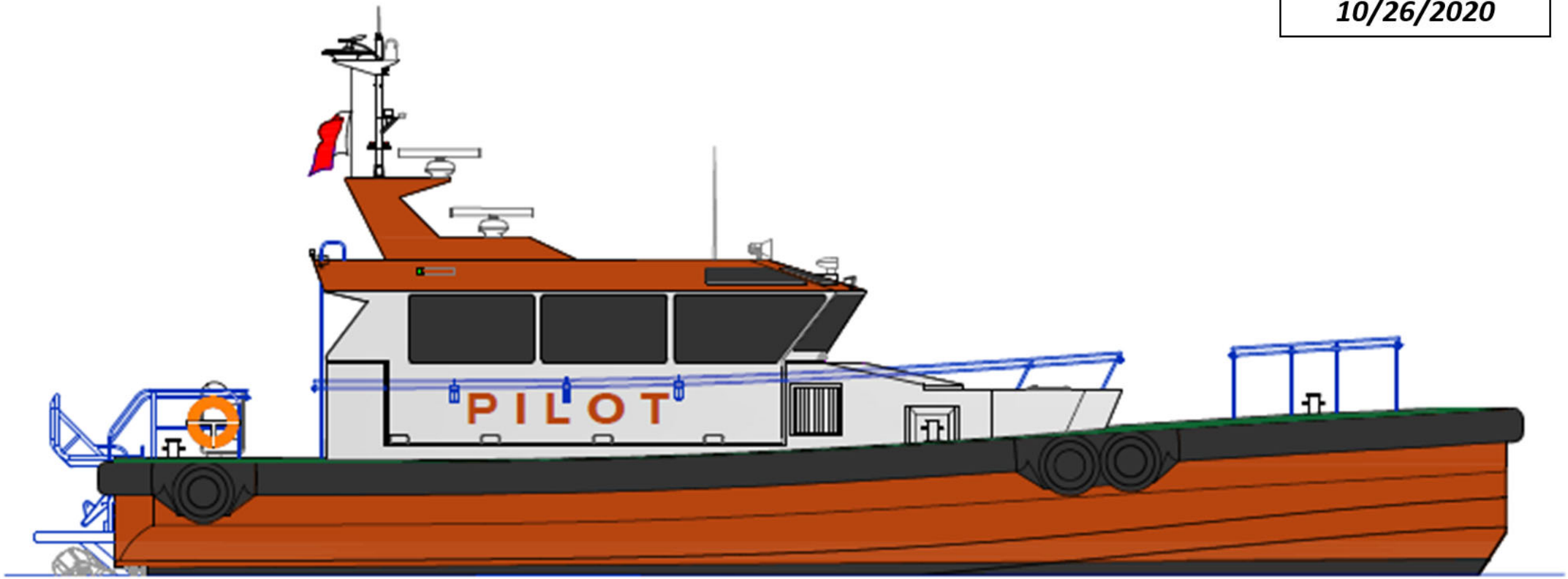
10/26/2020



New SFBP High Speed Pilot Vessel Requirements

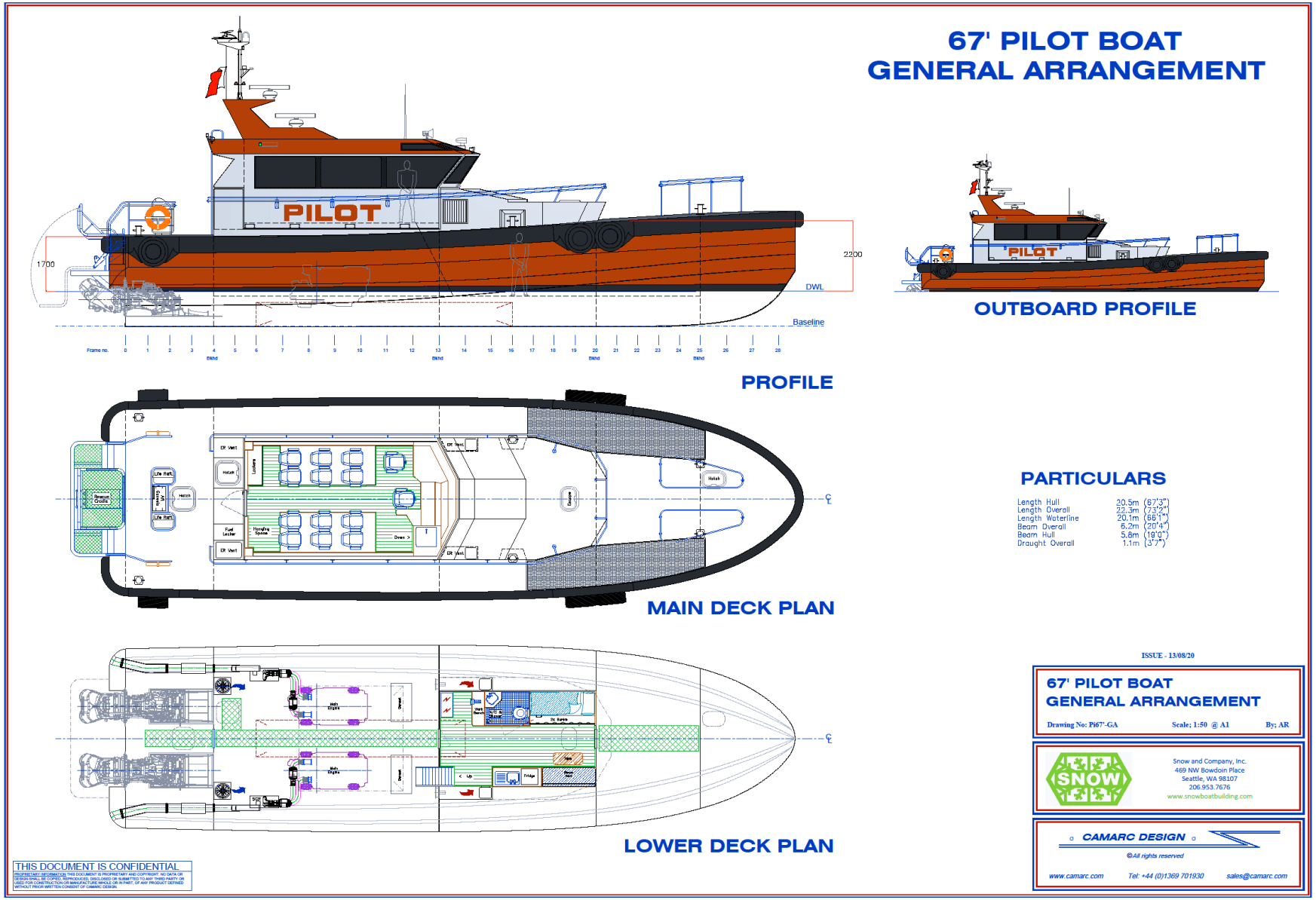
- Safety - Appropriate design and general arrangement for pilot transfer operations to ships and the offshore station pilot vessels
- Seakeeping - Operate in both protected bay waters as well as transit to and from the offshore pilot station in moderate to heavy weather
- Emergency Operations - Man overboard recovery capability in all conditions
- Speed, Endurance and Reliability - Cruising speed of 25 kt for typical SF Bar Pilots workload and vessel operational tempo
- Maneuverability - Excellent handling at both high and low speed for pilot transfers to vessels underway, at anchor and to docks
- CARB Emissions Requirements - Comply with current and future CARB regulations
- Environmental footprint - Reduce emissions, fuel consumption and noise profile
- Pier side shore power - Efficient remote switching to and from shore power to reduce generator emissions while at the Pier 9 home berth
- Crew workspace ergonomics - Modern equipment and arrangement for crew endurance and well-being
- Cabin noise reduction - Best soundproofing design and construction methods to reduce long term hazardous noise exposure to crews and pilots
- Electronics – Current, best available technology for navigation and vessel systems monitoring
- Cabin environmental system - Modern HVAC equipment for improved cabin fresh air exchange and temperature and humidity control

New Proposed SFBP High Speed Pilot Vessel

- Builder: Snow and Company - Seattle, WA
- Designer: Camarc Design - Argyll, Scotland UK
- Construction: 73-foot LOA - Aluminum Mono Hull
- Engines: MAN D2862 LE 438 1,200HP US EPA Tier 4
- Propulsion: Hamilton HTX52 Waterjets
- Gearboxes: Twin Disc MGX 6599 SC
- Generators: Northern Lights M944T3F 38kW
- Capacity: 2 Crew and 12 Pilots

Design Renderings

General Arrangement



Tier 4 Engines

- Power required for the SFBP high speed pilot vessel's operational profile is over 803 HP per engine
- US EPA and CARB require Tier 4 compliance on engines over 803 HP
- Pilot vessels are included in the upcoming CARB Commercial Harbor Craft Regulations
- In addition to Tier 4 exhaust aftertreatment, diesel particulate filters (DPF) will be required on commercial vessels in 2028
- New pilot vessels must be built to accommodate DPF systems – this impacts current selection of main engines

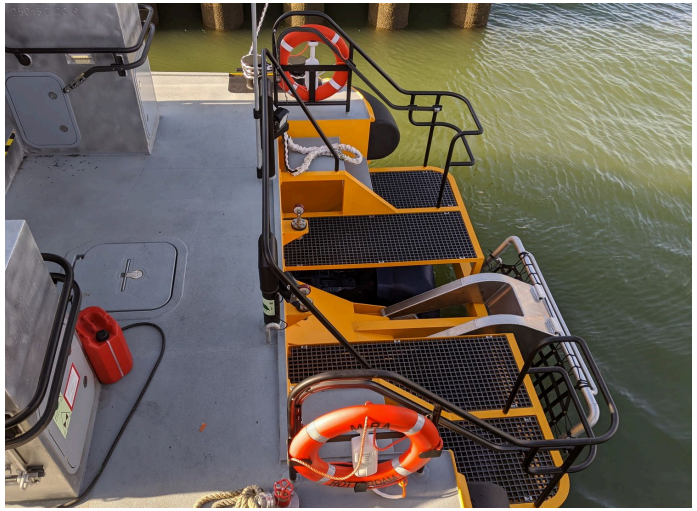
Waterjet Pilot Vessels

Link: Hamilton video on waterjet pilot vessels

- Pilot Safety: no propellers, rudders or struts under vessel during a man overboard event
- Improved maneuverability during pilot transfers
  - Fast acceleration
  - Full directional control at all speeds
  - Greatly improved positioning control during transfer
  - No gearbox and shaft brake shifting delays as with propellers
  - Can maintain a greater angle when alongside a ship for safer pilot transfers due to vectored thrust of all available power
- Improved high-speed efficiency compared to propellers
- Better suited for modern emission-controlled engines
- Greatly reduced debris strike damage compared to propellers

Man Overboard Recovery System

- Rapid recovery of victim
- One-person operation
- No lines, winches or rigging
- Safe use with waterjets
- Controlled at aft helm station
- Safer crew operation
- Greater chance of victim recovery in extreme conditions compared to hoist and line type systems



Builder - Snow and Company Boatbuilding

Link: Snow Boatbuilding

- Licensed to build Camarc Design vessels
- Former Kvichak Shipyard Facility in Ballard, WA
- Kvichak Shipyard built many U.S. and International pilot vessels
- Snow currently in contract to build 2 new Camarc pilot vessels for Savannah, GA Pilots
- West Coast builder for SFBP staff on site project management and prompt delivery when construction is completed

Designer - Camarc Design

- A worldwide leading pilot vessel design firm
- Specializes in seaworthy high-speed working craft from 5m to 70m
- Collaborated with the Kvichak Shipyard on several pilot vessel projects
- Designed over 130 pilot vessels worldwide
- Over 30 years of design experience and evolution

Link: Camarc Design

Three Columbia River Bar Pilots Vessels
Designed by Camarc
Built by Kvichak (now Snow)

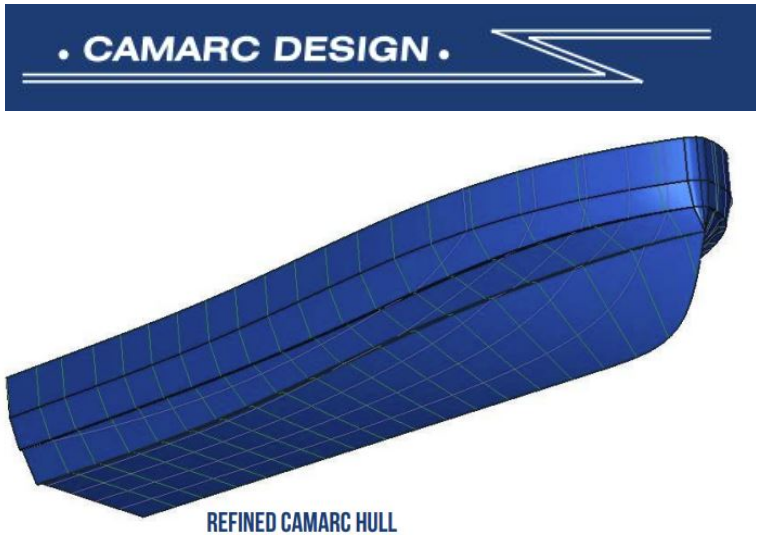
Camarc – Over 130 Pilot Vessels Worldwide

- Camarc US pilot vessels:
  - Columbia River Bar Pilots
  - Sandy Hook Pilots
  - Los Angeles Pilots
  - Houston Pilots
  - Savannah Pilots
  - Sabine Bank Pilots
  - Foss Maritime

- Camarc international pilot vessels:
  - Dutch Pilot Organization
  - Port of Harwich, UK
  - Port of Tees, UK
  - Milford Haven Port Authority, UK
  - Bordeaux Pilots, FR
  - Belgian Pilots
  - Sydney Ports, AU
  - Atlantic Pilotage Authority, CA
  - Pacific Pilotage Authority, CA
  - Suez Canal Authority
  - Port of Dalian, China

Camarc Refined Hull Design

- The new Refined Camarc Hull is based on the original and well proven hull form
- Extended waterline length improves seakeeping and efficiency
- Seakeeping
  - 10% reduction in vertical acceleration
  - Reduction in slamming
  - No compromise in course keeping
  - Curved forefoot to assist in boarding and breaking away
- Efficiency
  - 2.3 knot speed improvement, 9% more efficient
  - 10% reduction in fuel consumption
  - Cleaner water separation and spray reduction



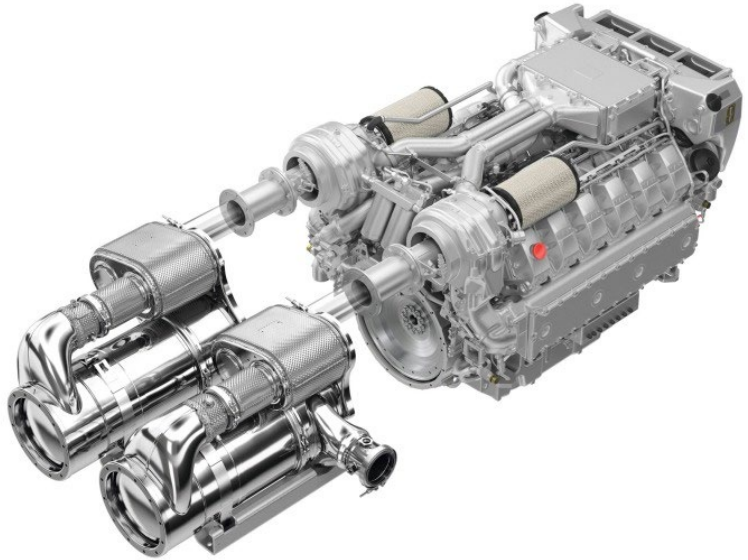
Link: Camarc Refined Hull

Dutch PV MIRA – Refined Camarc Hull

MAN - Main Engines

- Model D2862 LE 438, 24-liter, 12 cylinder 4-stroke diesel
- 1,200 HP (882 kW) at 2,100 RPM
- Common Rail Direct Fuel Injection
- Modular SCR (Selective Catalytic Reduction) exhaust aftertreatment system with compact design and high flexibility in compact spaces
- US EPA/CARB Tier 4 Compliant
- Appropriate power density for high speed pilot vessels
- In service now on Dutch pilot vessels, soon on Canadian pilot vessel in construction
- Under consideration for SF Bay Area WETA ferry new construction and repower projects
- Low noise level

Link: MAN Engines



MAN – Tier 4 Exhaust Aftertreatment

- MAN modular exhaust gas aftertreatment (EAT), a compact SCR (Selective Catalyst Reduction) system
- Meets US EPA and CARB requirements
- Lightweight and compact, ideal for pilot vessel size
- Reduces nitrogen oxides (NOx)
- Can be used with diesel particulate filter (DPF) in future CARB regulations

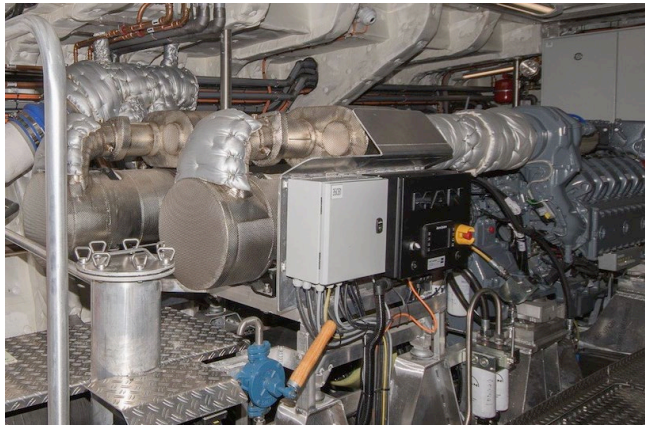
Link: MAN SCR

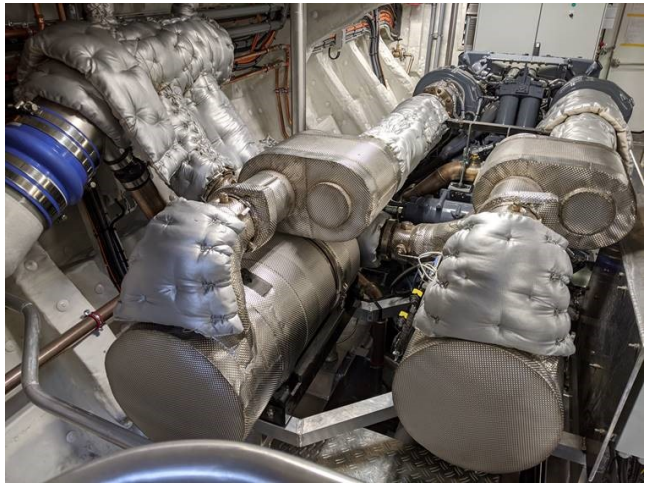
Link: Dutch P/V LUNA MAN SCR

MAN – D2862 Engine In Pilot Vessel Use

Dutch Pilot Vessel MIRA

Link: Dutch P/V MIRA





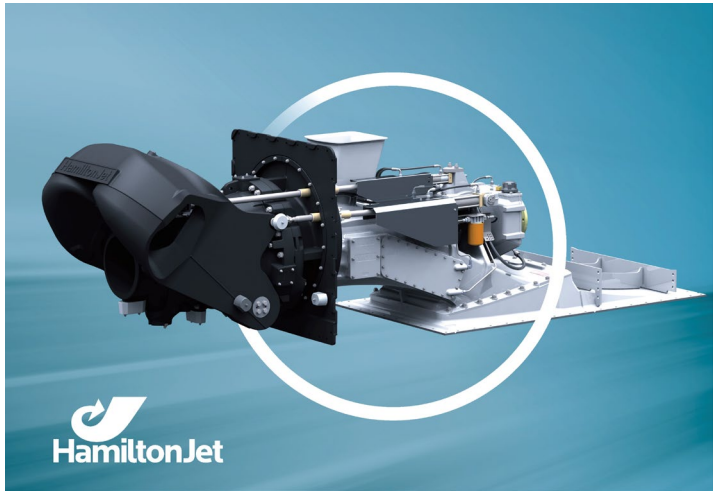
Link: MAN D2862 on Dutch P/V LUNA

Dutch Pilot Vessel LUNA

Hamilton – HTX Waterjets

- HTX – Newest generation of proven Hamilton waterjet propulsion
- 5% - 7% more thrust than previous models at high speeds
- Improved cavitation resistance
- Enhanced corrosion resistance and anode layout
- Compact inboard footprint for smaller engine rooms
- Improved AVX electronic controls

Link: Hamilton HTX Series



Hamilton HTX52

Dutch Pilot Vessel MIRA

Similar to Camarc SFBP Design

[Link: Marine Pilots - Christening of new pilot tender "Mira"]

SFBP Design Renderings