Next-generation CTVs: enhanced designs for enhanced operations

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Next Generation CTV's

Simon Schofield- CTO

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BAR Technologies- Simulation Driven Maritime Innovation

The company was formed by in 2016 to offer access to world class specialists at the forefront of marine industry development and to tap into the wealth of design knowledge, technical skills and intellectual property developed through the team's involvement in the America's Cup.

We draw on our race team heritage and DNA to help ensure we deliver competitive advantages to our clients and their products.

Our cohesive team specialise in technically challenging, multidisciplinary design and optimisation maritime engineering projects.

- ***Naval Architects & Optimisation Specialists*** utilising progressive Neural Network/AI optimisation techniques.
- ***Aero/ Hydrodynamicists*** with world leading CFD capabilities and a life time of tank testing and validation experience.
- ***Performance Simulation & Analysis*** encompassing numerical simulation specialists with bespoke tools including: cutting-edge dynamic 6 DOF marine performance prediction software, our data collection, analysis, verification and viewing tool set, and the development of full immersion simulations with a full motion platform onsite.
- ***Mechatronic & Control Engineering*** capabilities that borrow heavily from the motorsport arena and harness expertise in electronic systems, telemetry, software, sensor technology, simulation and predictive analytics to provide integrated intelligent control solutions.
- ***Detailed Design & Engineering*** an inhouse team to ensure our designs deliver on their potential. Key skills include: structural and composite engineers (including advanced FEA and FSI capability), mechanical, hydraulic and electrical engineers, weight estimation and stability specialists, project management, prototyping and procurement capabilities.

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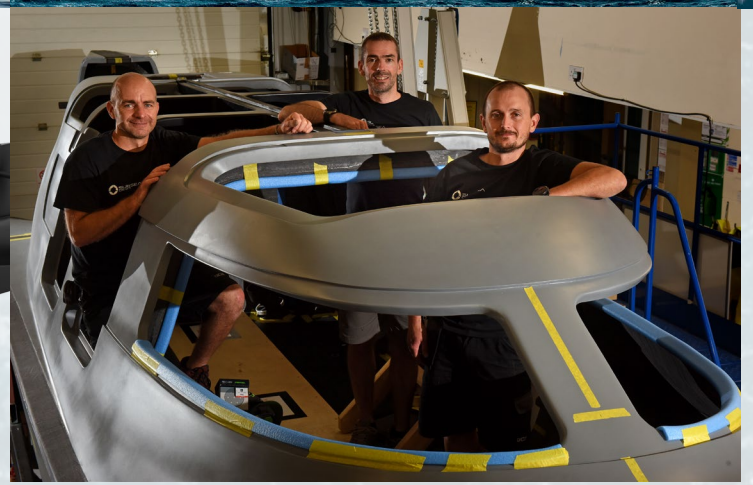

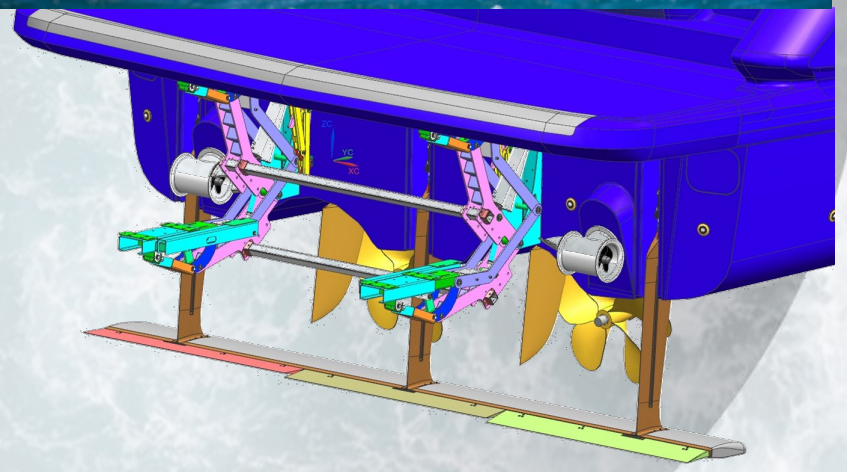

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Drawing on our race team heritage and DNA and advanced simulation and optimisation capability to ensure we deliver competitive advantages to our clients and their products.

The Challenge

The Baseline – Chartwell 24

- Displacement 55/85 Tonnes
- Max Speed: 29 Knots
- Fuel: 16,000 litres
- Ind. Persons: 24
- Crew: 3-6
- Deck Cargo Area: 70m^2
- Construction Area: 615m^2
- Drive Train: Twin S56-3 Waterjet

The Design Approach

- Comfort, seakeeping and efficiency/CO2 emissions paramount
- Focused on like for like capability
- Internal and accommodation space comparable
- Maximise load carrying capacity and deck space
- Partnered with Chartwell Marine to encompass latest ‘practical’ CTV thinking
- Cost sensitive design
  - Same drive train assumed
  - Construction area kept close to base line construction area
  - Repackaging of ‘known’ components
- Electric/Hybrid Options

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BAR TECH30

BAR TECH30

- Foil-stabilised proa configuration with Small Waterplane Area (SWA) outrigger
- Incorporates FOSS technology
- Additional outrigger mounted foil
- Variable load carrying capacity
- No requirement for SWA hull ballasting
- >50% less push-on requirements
- Drive train choices open
- Electric/Hybrid options in development

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Performance

Efficient Hull Design

BAR's innovative hull concept deliver significant resistance reduction:

50% @ 15 kt ***37% @ 20 kt***

30% @ 25 kt ***22% @ 30 kt***

Wellbeing – Fit for Work

The seakeeping gains by combining FOSS with an optimised hull form will deliver crews fit for work thus increasing the "Go to Work" window:
35 - 70% less vertical accelerations @ passenger locations

Reduced Emissions

Reduced resistance means reduced emissions:
- About 600 T of CO_2 per annum per 12-hr shift
- About 1,000 T of CO_2 per annum per 24-hr shift

Hs Capability

Superior seakeeping combined with up to 50% improved performance during push on gives
2.5 m Hs Capability

Extended Maintenance Window

The superior seakeeping of the BAR CTV ensures fewer abortive trips and a greater operating window giving less delays and greater efficiency

Cost of Build

The boat has been costed and contracted at a UK boat yard. The price estimate is comparable to the cost of the current catamarans

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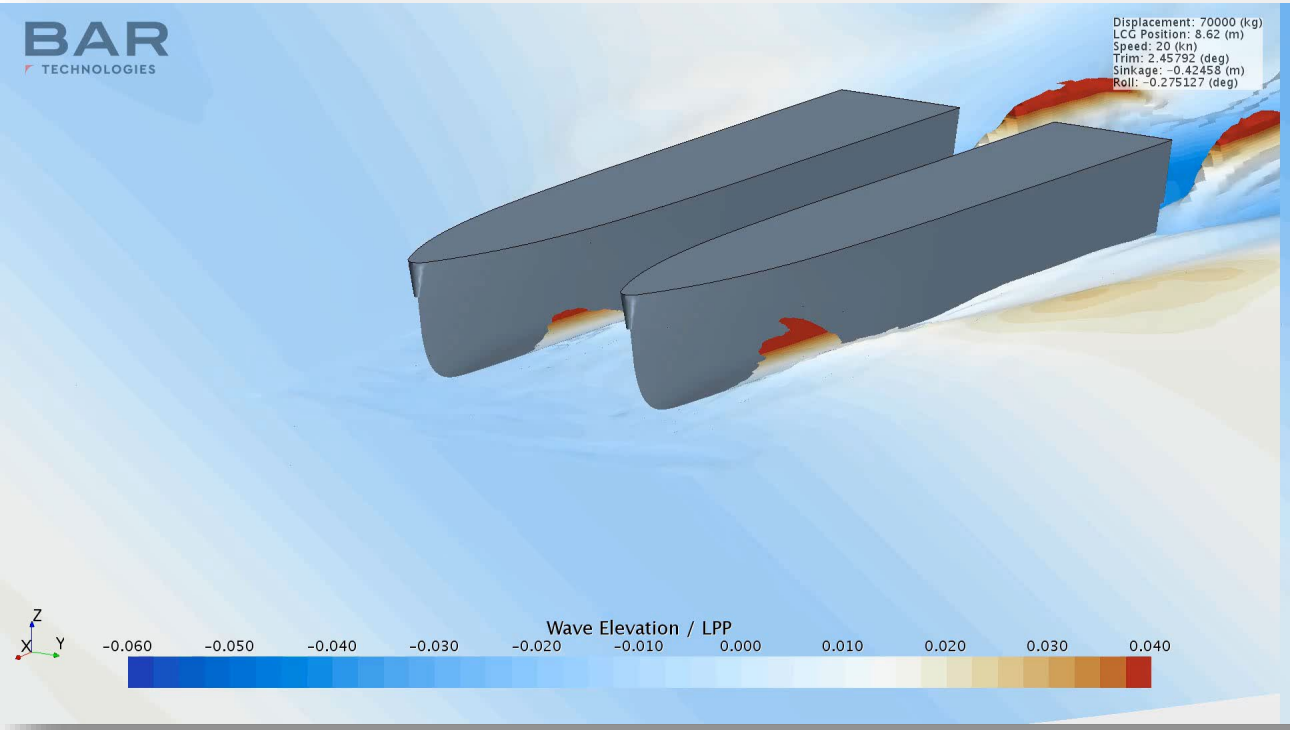
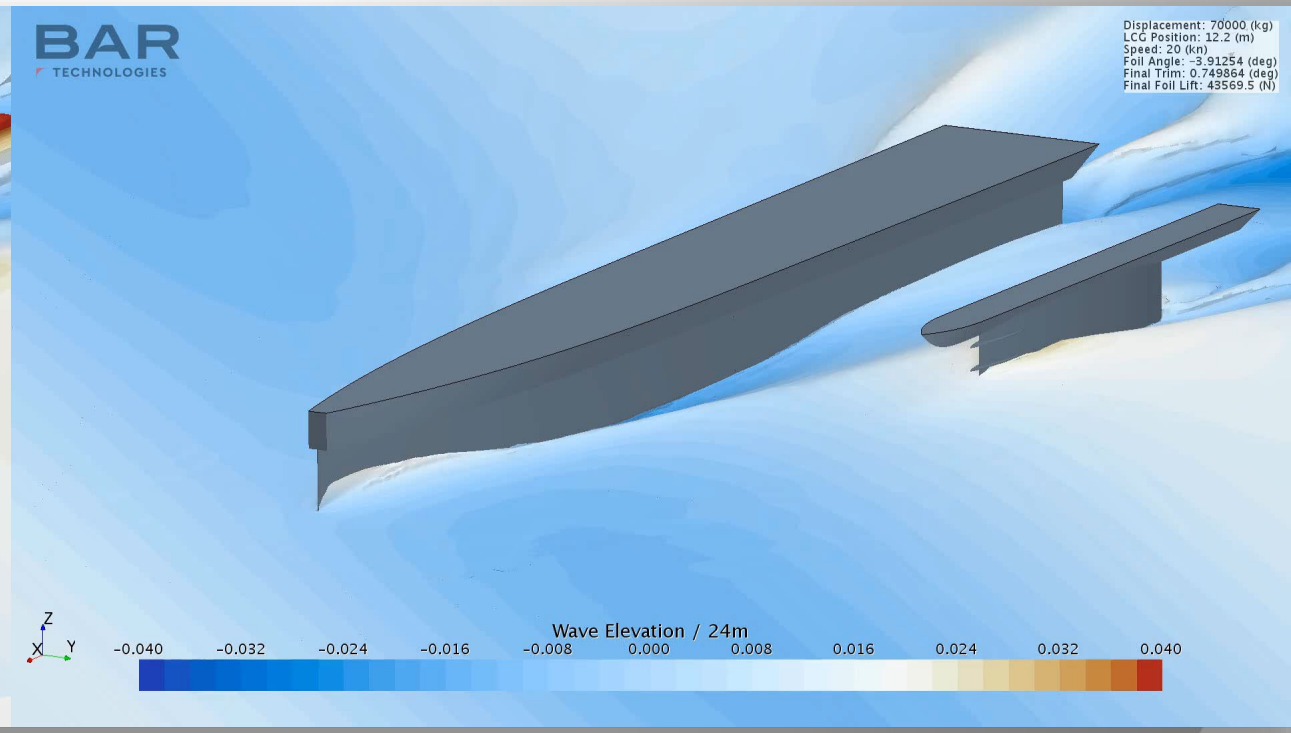
Motion Comparison





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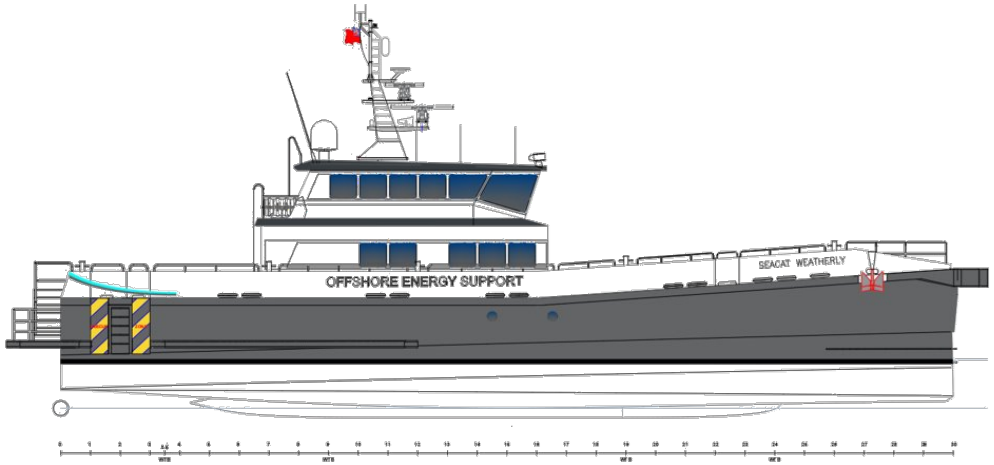
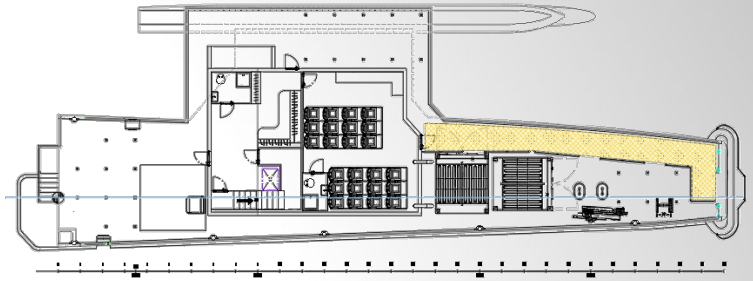
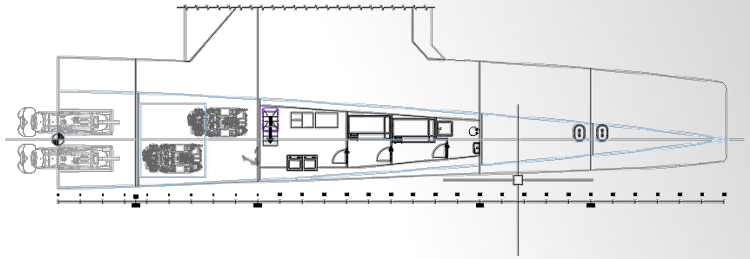
Currently Inbuild



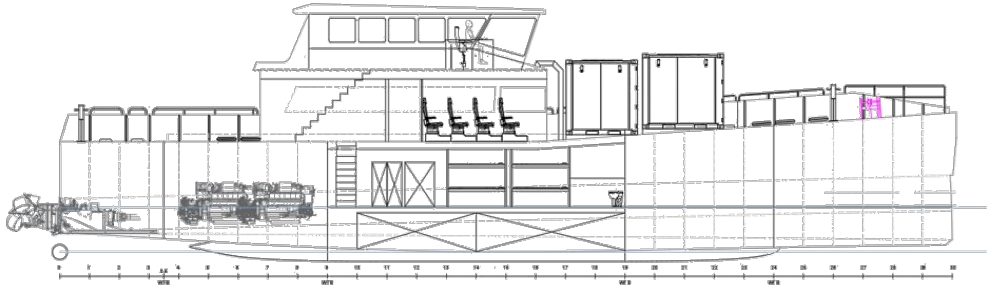
VESSEL PROFILE



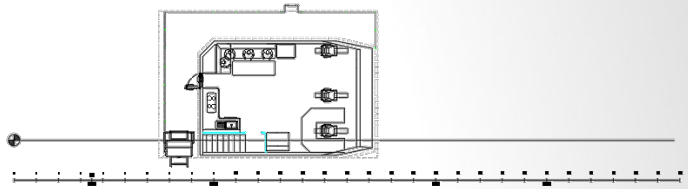
PLAN VIEW - WEATHER DECK



PLAN VIEW - ENGINE DECK



VESSEL SECTION VIEW



PLAN VIEW - BRIDGE DECK

- First Hulls in Construction for Seacat Services, Launch Early 2022
- Considerable interest from USA and Asia
- Larger 50m, 45 knot, 3m Hs vessel in development

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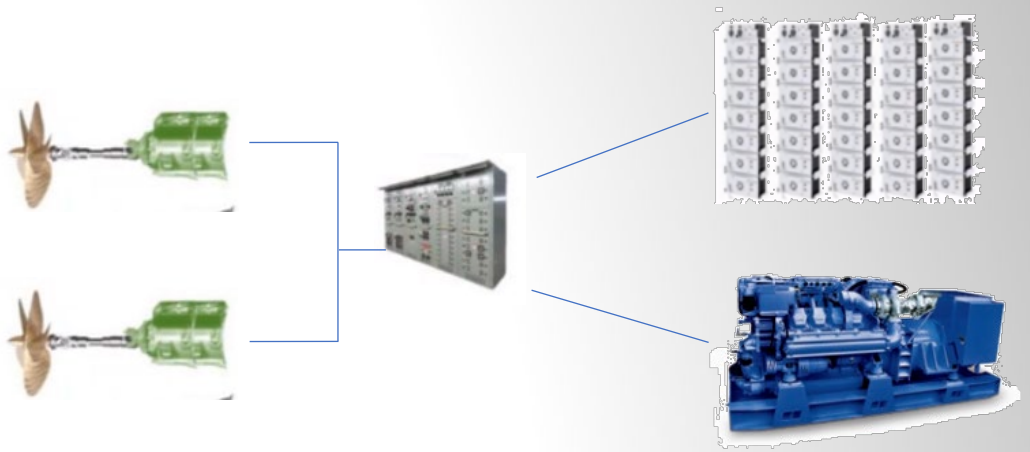
Electric Vessels- Hybrid Range Extenders

CAPABILITIES:

- 1.5 hour at 24kn- 100% Electric
- 26 kn Sprint Speed- 100% Electric
- Hybrid Diesel/Electric Range Combinations
- Consideration/Allowance for Offshore Charging
- 20 kn – Diesel – Long Range Delivery Mode



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FOSS and Standard CTVs

- FOSS provides significant seakeeping and efficiency
- Chartwell 24 now offered with FOSS system
- Significant gains when retrofitted to old tonnage

Chartwell 24 Case Study

- Fuel Savings/ GHG reductions	C. 10%
- Vert Acceleration/ MSI improvements	C. 25%
- Top Speed Improvement	C. 1.5 knots

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bartechnologies.uk

The Workboat Association

www.workboatassociation.org

" The trade association for Workboat Owners, Operators, Stakeholders and Professionals "

- Introduction to the Workboat Association

  - Designing-in value for windfarm customers
  - Improving safety and productivity of wind technicians and enhancing life onboard

- Which form of propulsion is best-suited to cost reduction and reduced emissions?
- Electric propulsion, the first examples

  - New roles for CTVs: beyond transporting passengers
  - SATVs: staying offshore for longer

Kerrie Forster
Chief Executive Officer

The Workboat Association

General Membership

- 135 members
- 630 vessels
- 3200 employees
- Registered in 10 countries
- Global operations

CTV Owner/Operator Membership

- 25 members
- 183 vessels
- 915 employees (approx.)
- Operations in Europe and Asia
- *Talks have been made with the USA*

The Workboat Association Technical Workgroup is chaired by Andy Page, Director of Chartwell Marine Naval Architects.

The work group provides a platform to share interest and opportunities in relation to technology developments and advancements, environmental impact and vessel sustainability, and to proactively guide the supply chain and its stakeholders.

Which propulsion is best-suited to cost reduction and reduced emissions?

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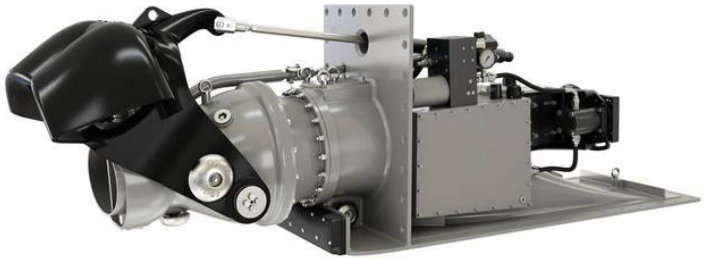

Picture: Marine Jet Power

Picture: nsenergybusiness.com

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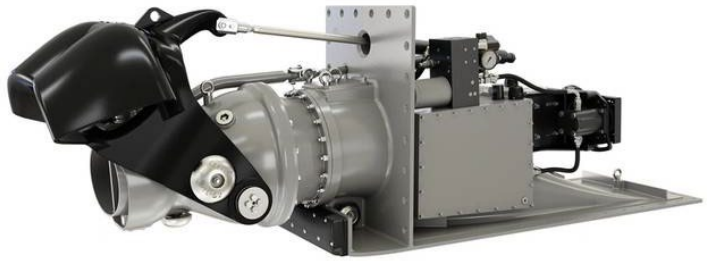

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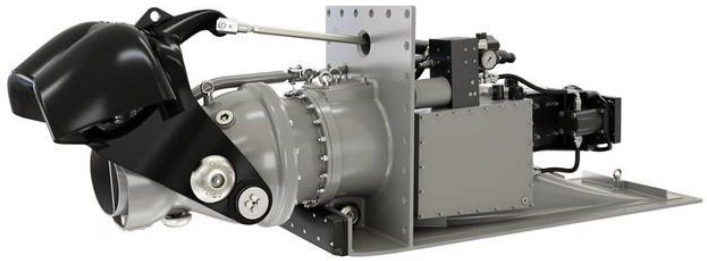
Which propulsion is best-suited to cost reduction and reduced emissions?

Who's costs and who's emissions?



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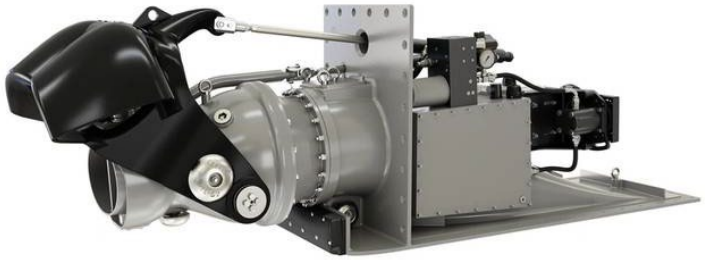

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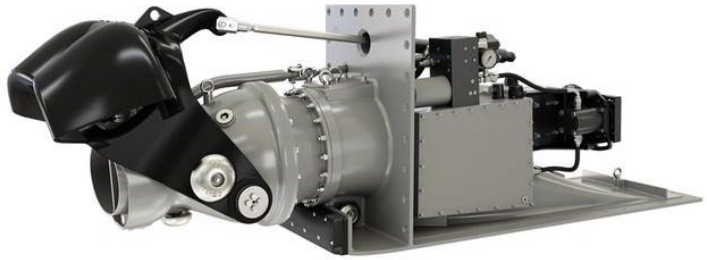

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Designing-in value for windfarm customers and improving both safety and productivity of wind technicians and enhancing life on board

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New roles for CTVs: beyond transporting passengers

- SATVs: staying offshore for longer

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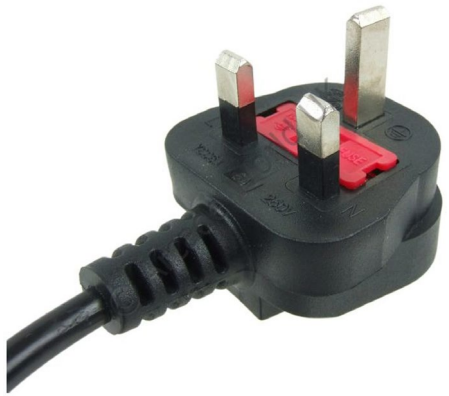

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New roles for CTVs: beyond transporting passengers

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The Workboat Association

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Chief Executive Officer

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let's do this together

INERTIA PM5

#Trimaran #SmallWaterplaneArea #Hydrofoil #Inertia #ElectricPropulsion #Hybrid #Battery #Silence #Comfort #Safety #Operation24/365 #24paxCTV #5crewCabins #CargoCapacity #Softbow #WorldTerral #WorldLevante #IMO-HSC

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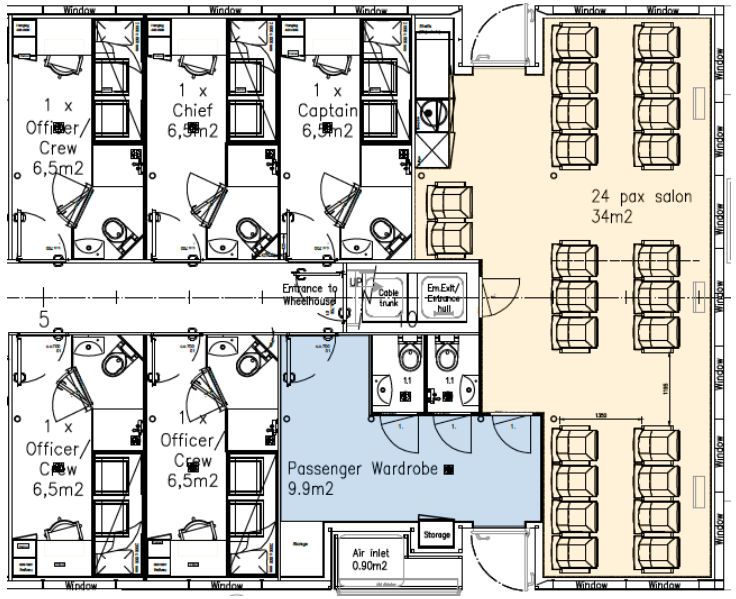
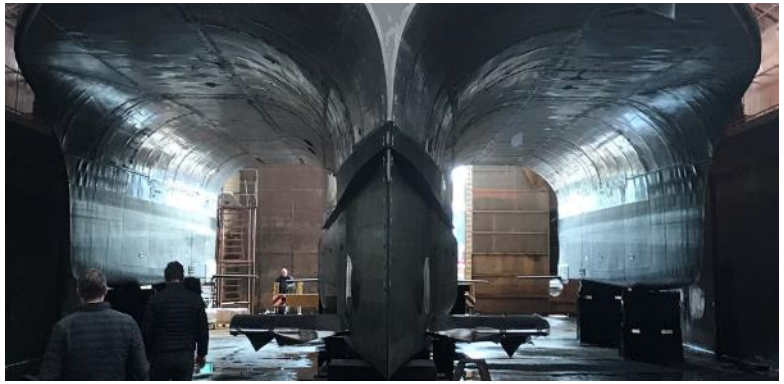
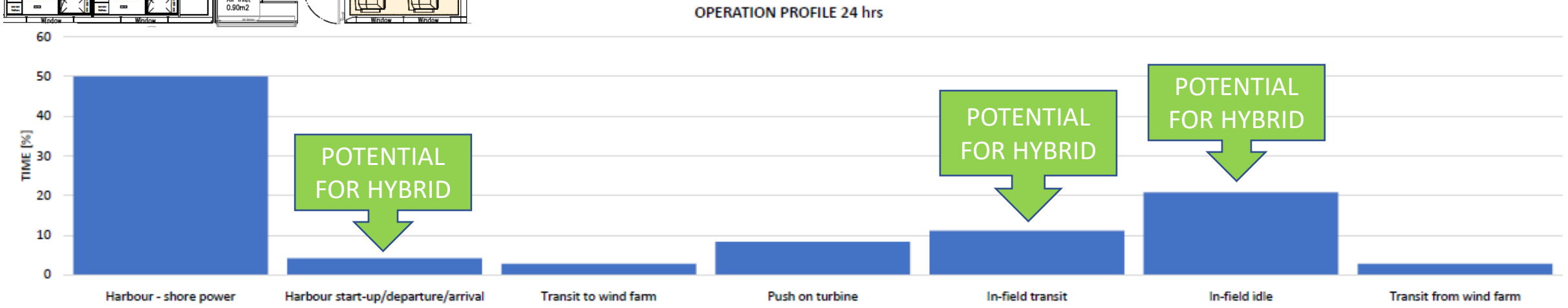


WHY TRIMARAN?

- SOFT ROLL AND PITCH MOTIONS AT ALL SPEEDS (LOW GM, HIGH DAMPING)
- LARGE DECK AREA AND CARGO CAPACITY
- LOW RESISTANCE RELATIVE TO CAPACITY





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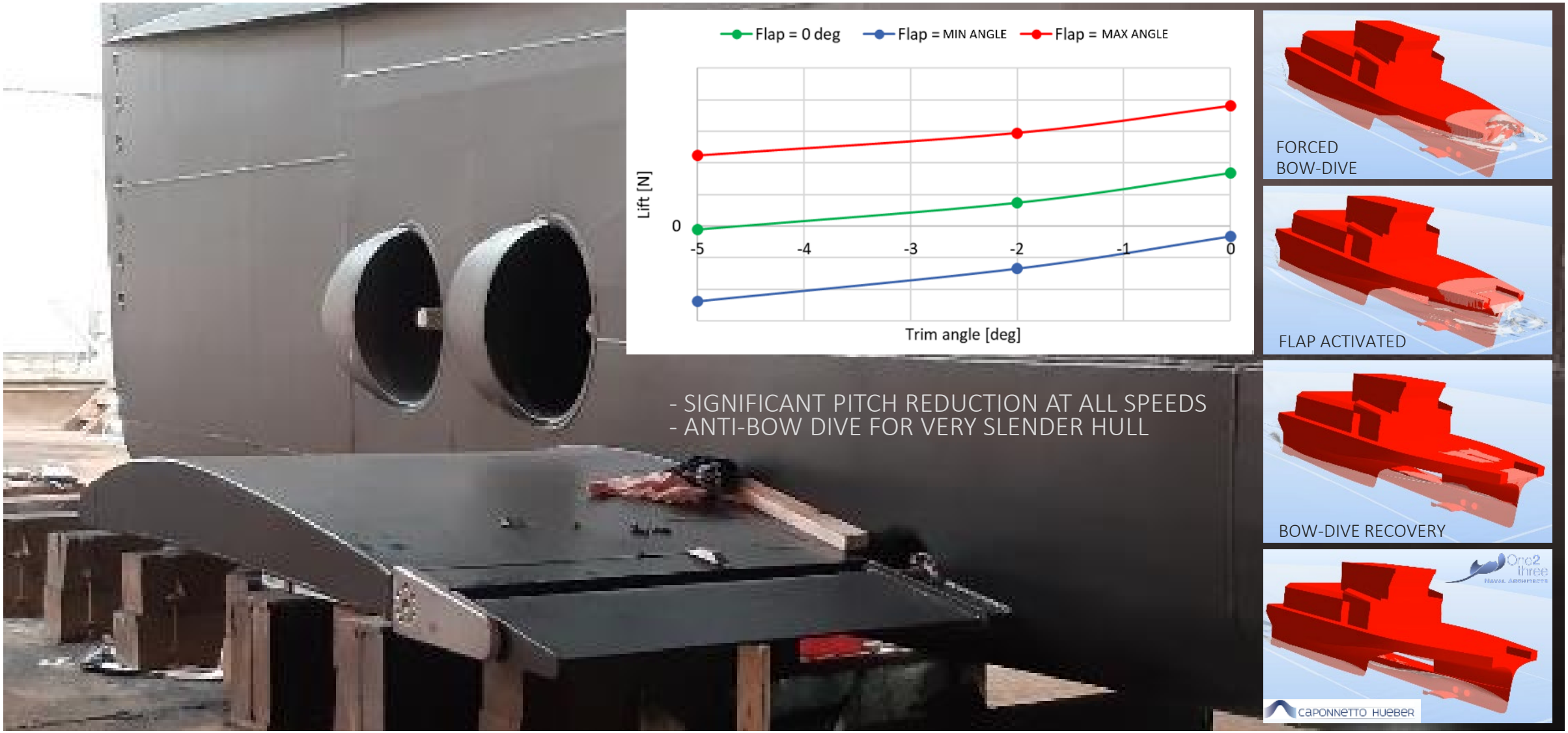

- SIGNIFICANT PITCH REDUCTION AT ALL SPEEDS
- ANTI-BOW DIVE FOR VERY SLENDER HULL

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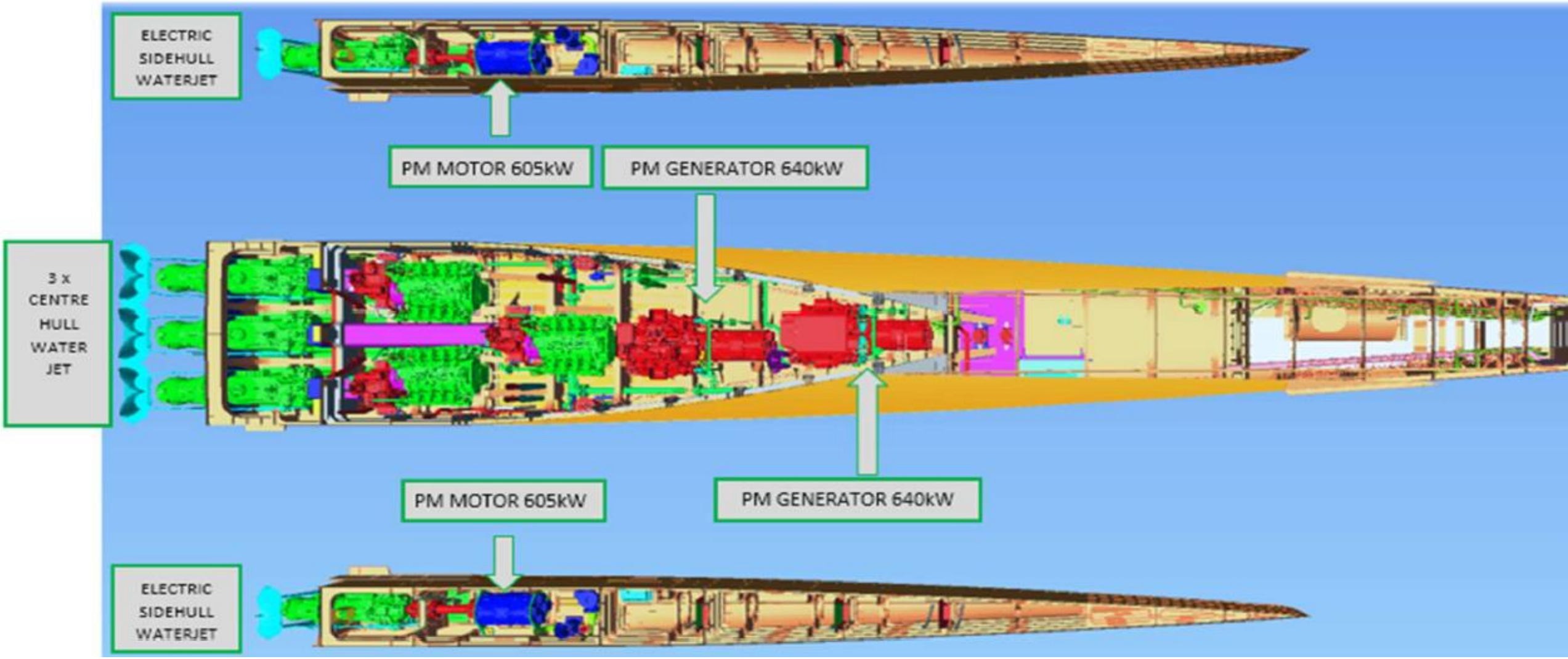
#Trimaran #SmallWaterplaneArea #Hydrofoil #Inertia **#ElectricPropulsion #Hybrid #Battery #Silence #Comfort** #Safety #Operation24/365 #24paxCTV #5crewCabins #CargoCapacity #Softbow #WorldTerral #WorldLevante #IMO-HSC



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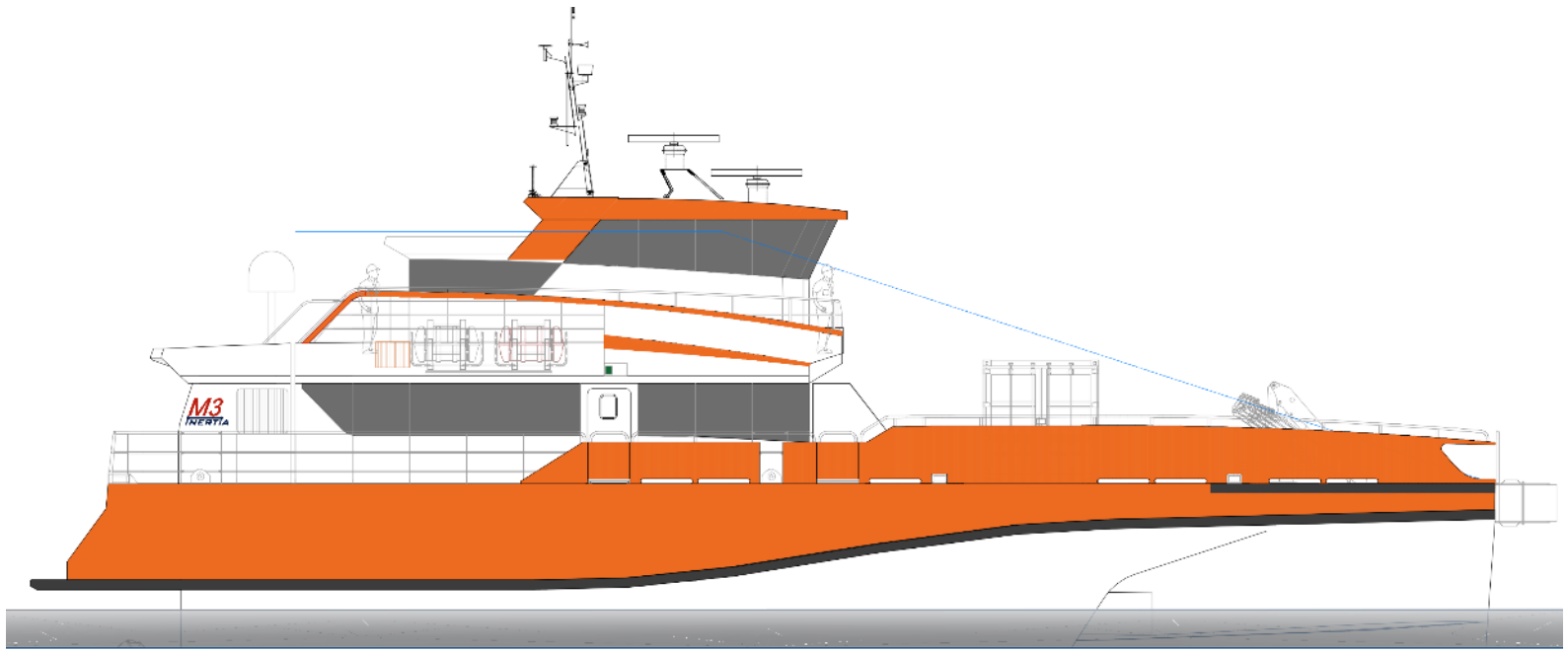
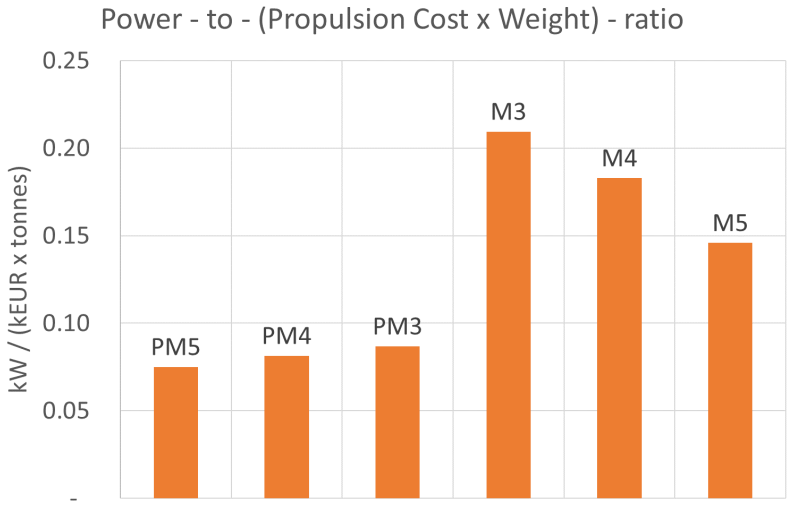
#Trimaran #SmallWaterplaneArea #Hydrofoil #Inertia #ElectricPropulsion #Hybrid #Silence #Comfort #Safety #Operation24/365 #24paxCTV #5crewCabins #CargoCapacity #Softbow #IMO-HSC **#NewGenerationInertiaM3**

coming soon…





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