



 64m m/y «CUPANI» Retrofit Design



Refit of Explorer Vessel Cupani

General

- Yacht name (currently) ➤ Cupani
- IMO Number ➤ 1008920
- Year built ➤ 2006
- Class Society ➤ Lloyds Register
- Class Notation ➤ ✕100A1 SSC YACHT MONO G6,
✕LMC, UMS, BWTS
Descriptive notes SHIPRIGHT
(BWMP(T), IHM-EU+)
- Length over all ➤ 63.84 m
- Length pp. ➤ 56.96 m
- Beam over all ➤ 12.40 m
- Depth amidships ➤ 6.85 m
- Scantling draft ➤ 3.68 m
- Gross tonnage ➤ 1428 GT
- Maximum speed ➤ 14,7 knots
- Cruising speed ➤ 12 knots
- Range ➤ 5.900 nm at 12 knots,
1 generator running at 100 kW



Refit managment & coordination

Arcadia Maritime Group is the Owners Representative on this refit project and has commissioned Navalista, on behalf of the Owner, for a large scope of design and engineering works.

Regarding the global design and engineering works, Arcadia Maritime Group, is in charge of :

- ✂ Specification of the refit works.
- ✂ Specification of the design and engineering tasks, provision of conceptual arrangements and conversion plans.
- ✂ Retrieval of information from Owner, Crew, Shipyard, suppliers, and project partners for the purposes of design and engineering tasks.
- ✂ Coordination of design and engineering task and scheduling of and between the various partners in the project.
- ✂ Obtaining the regulatory framework as applicable by Class Society and Flag State for the intended retrofit works.
- ✂ Coordination of Class Society and Flag State approval process.
- ✂ Weekly communications with project partners on the development and progress of scope of work.
- ✂ Supervision of the works on site.
- ✂ Overseeing the on-site weight monitoring process.

- Onboard 3D scanning and survey

Execution of high-precision laser scanning onboard to capture the vessel's current geometry and structural condition. Includes reference measurements and alignment control for further digital processing.

- Point cloud processing and conversion to polygonal mesh

Cleaning, registration, and optimization of raw point cloud data, followed by conversion into an accurate polygonal mesh suitable for geometric analysis and modeling.

- Mesh analysis against as-built body plan and original builder's documentation

Comparative analysis of the scanned mesh with as-built body lines and shipyard documentation to identify deviations, structural modifications, and geometric inconsistencies.

- Transfer of mesh geometry into CAD environment and NURBS surface reconstruction

Import of validated mesh into CAD software and reconstruction of fair NURBS surfaces to obtain an engineering-ready 3D model suitable for design modifications.

- Structural design and integration of stern platform

Design adaptation and geometric integration of a new stern platform into the existing hull structure, ensuring structural continuity and hydrodynamic consistency.

- Installation of new retractable stabilization system

Engineering integration of a modern stabilization system, including structural support arrangement, load assessment, and preparation for installation within the existing hull configuration.

- Integration of CAD / Mesh / NURBS models for FEM structural analysis

Preparation and consolidation of digital geometry for finite element modeling, including mesh refinement, boundary condition setup, and structural load simulation.

- Weight estimation and stability assessment

Estimation of weight transfer and distribution in progress of refit works. Stability calculations according to performed modifications.

- Skeg extension

Engineering and geometric integration of elongated skeg within existing hull configuration.



NAVALISTA works for project CUPANI

① Tests and reports

- ✘ Presence during intake and delivery trials
- ✘ Weight estimate and weight monitoring
- ✘ Inclining tests and test reports
- ✘ Stability information (booklet)
- ✘ Tonnage calculation
- ✘ Load line calculation
- ✘ Tanks Sounding tables

② General documents

- ✘ GA update
- ✘ Fire and safety plan update
- ✘ Docking plan update
- ✘ TanI plan update

③ Structural part

③.1 3D scanning and data processing

- ✘ 3D scanning
- ✘ Point cloud processing
- ✘ Mesh analysis, transfer of Mesh geometry into CAD environment

③.2 Structural calculations

- ✘ Strength calculations / FEM analysis (i.e. Swim platform, Deck in area of Jacuzzi, Foundation for crane, etc)

③.3 Class drawings

- ✘ Structural class drawings for approval by LR

③.4 Detail design

- ✘ 3D (ShipConstructor) of existing and new structures (Swim platform, New stabilizers, Skeg elongation, internal structure modifications)
- ✘ Demolition plans
- ✘ 2D Structural workshop drawings and 3D Assembly drawings(SC)
- ✘ Production info for cutting and bending of plates and profiles (SC)
- ✘ Foundations - FEM calculations 3D, 2D drawings, PI
- ✘ Reports (Bill of Material)

④ Mechanical part

④.1 Various Calculations

- ✘ Air flow calculations due to modification of HVAC system
- ✘ Fan coils calculation
- ✘ Fans capacity calculations
- ✘ Deack heating system - heating elements calculations
- ✘ Calculations for the Freezer System

④.2 System diagrams

- ✘ Update of diagrams - HVAC, Raw water system, Fresh water system, Compressed air system, Drain system

④.3 Detail design

- ✘ 3D systems coordination (HVAC, Exhaust system)
- ✘ 2D Workshop drawings for systems
- ✘ PI for systems
- ✘ Reports (Bill of Material)

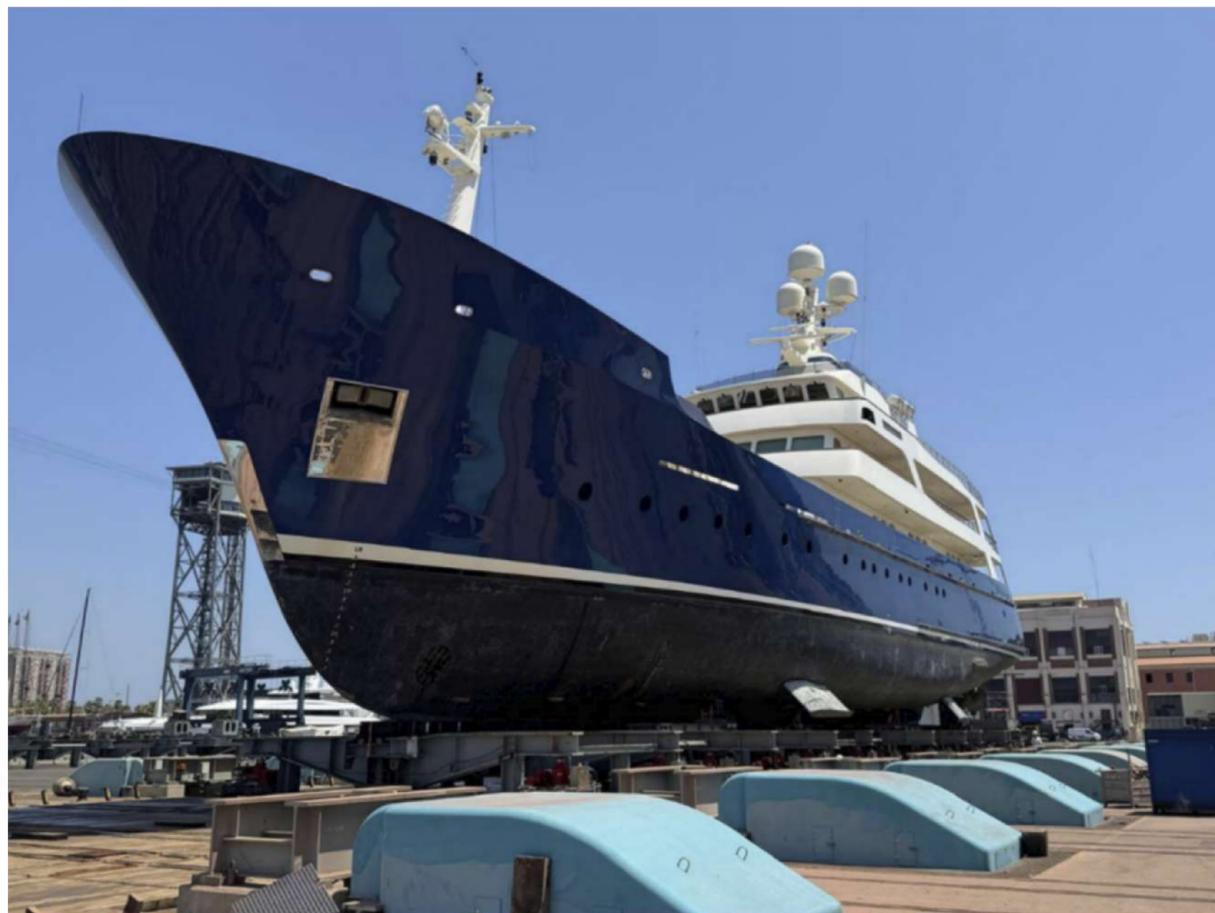
⑤ Electric part

- ✘ Electrical Balance Calculation
- ✘ 3D routing of cable traces
- ✘ El.power supply and control schematics
- ✘ El.power supply and control cabling workshop drawings
- ✘ Reports (specifications)

⑥ Electronics

- ✘ Antenna plan update
- ✘ Design new bridge panels layout
- ✘ GMDSS/Navigation Project

Onboard 3D scanning and survey



- Scanning workflow preparations
- Investigation of key and critical points for further project development
- Discussion with Customer and Crew for better performance
- On-site check and improving results

Point cloud processing and conversion to polygonal mesh



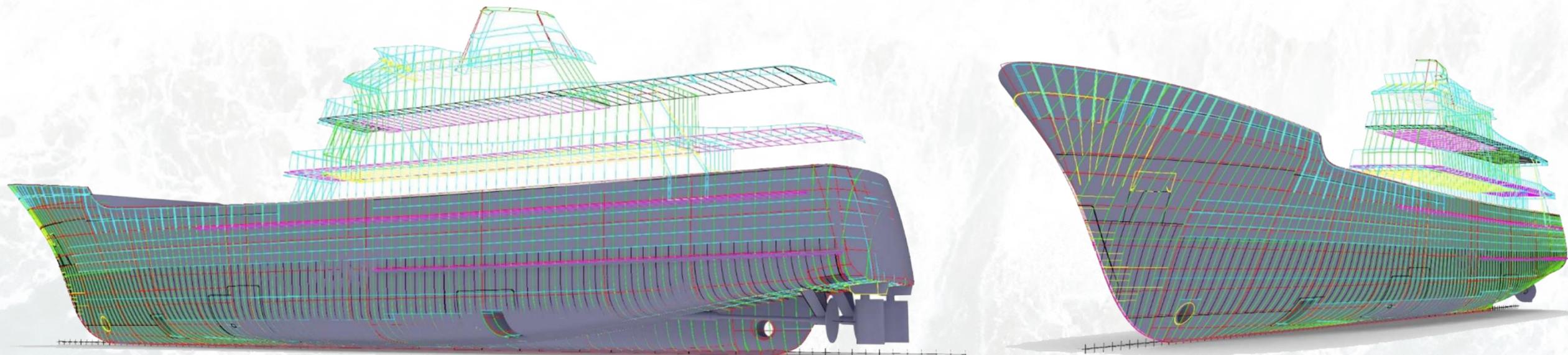
- 1 Postprocess of scan data, removal of unused points and objects
- 2 Division and separation of point cloud
- 3 Hull point cloud preparation

- 4 Mesh creation and analysis of results
- 5 Finalization and idealization of obtained mesh
- 6 Submit of results

Mesh analysis against as-built body plan and original builder's documentation



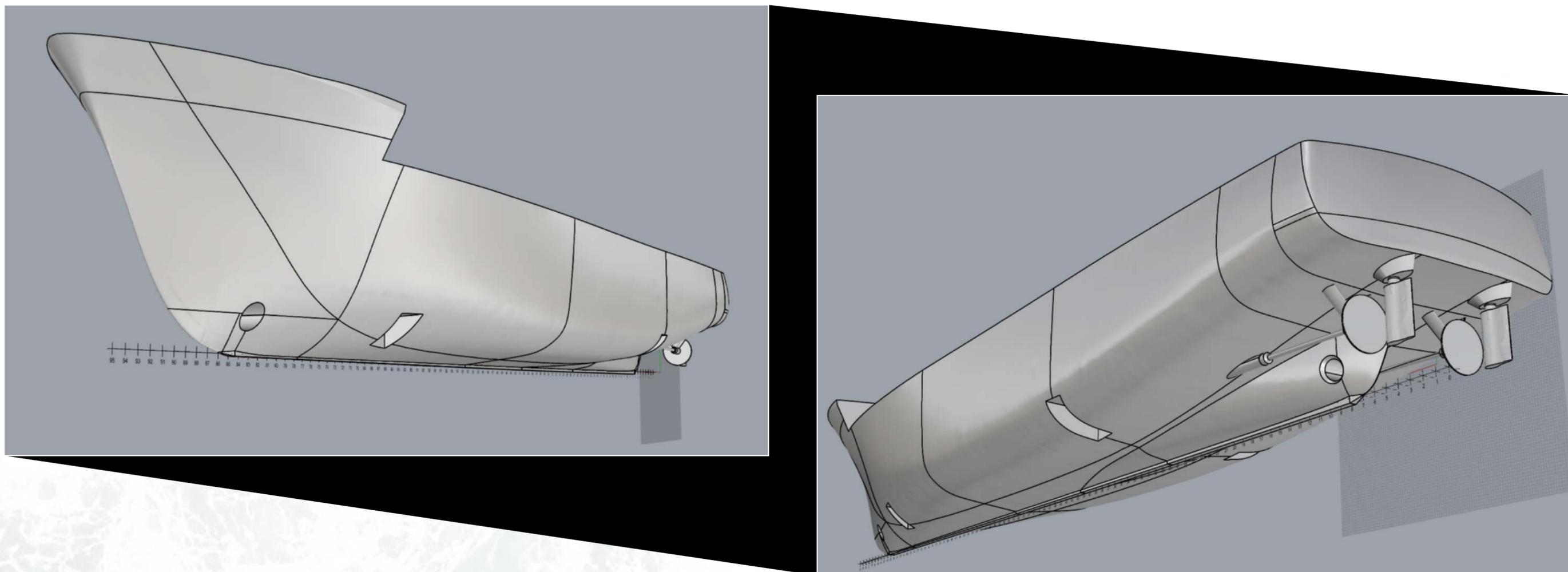
Interference check of point cloud data with as-built hull outfitting and propulsion machinery



Interference and clash check of hull shape mesh and as-built body lines

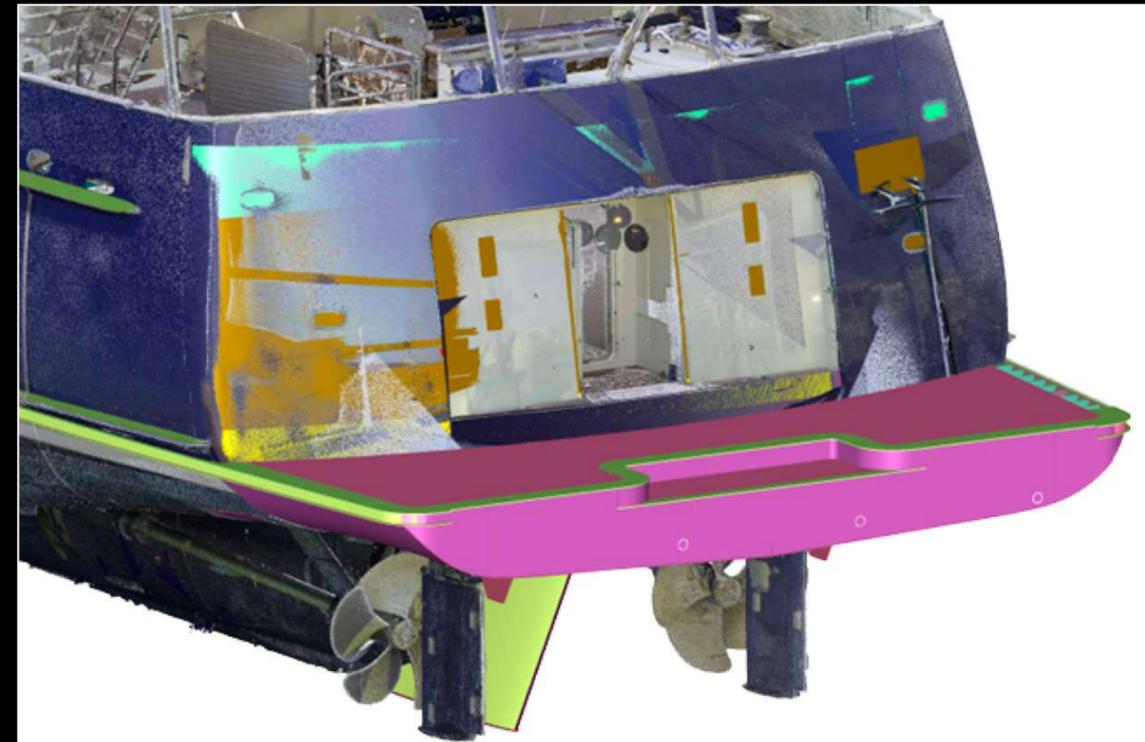
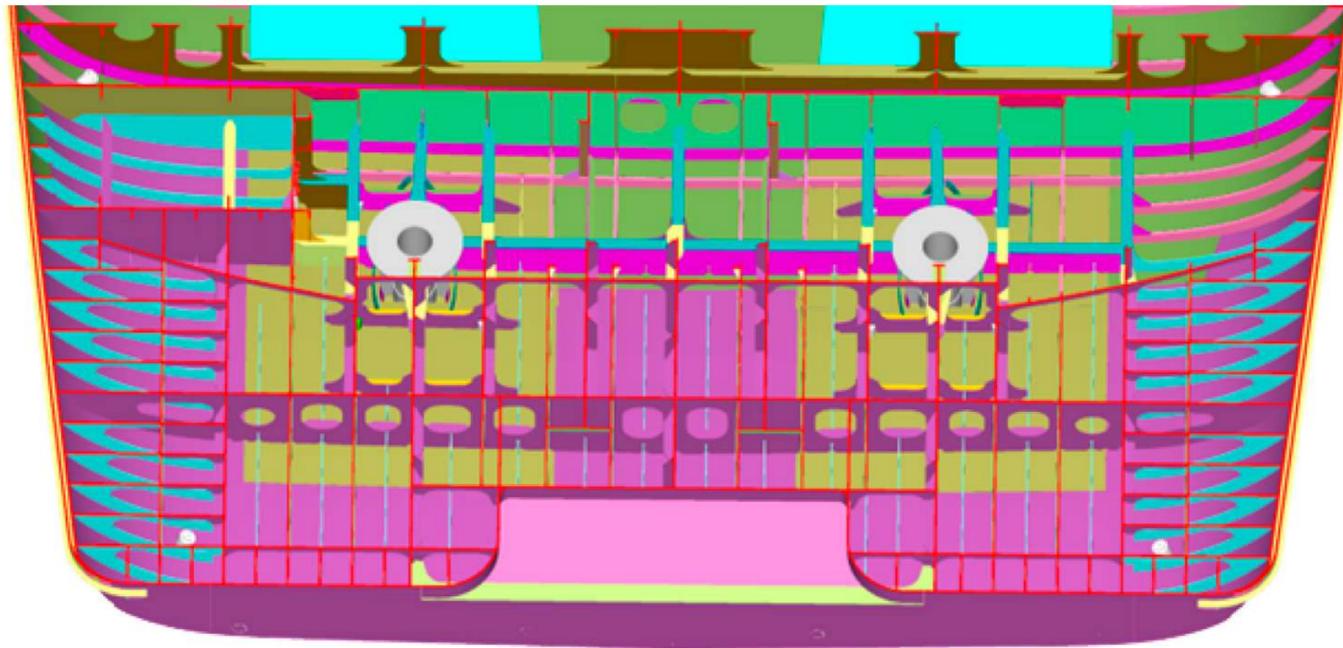
At this stage provided report and results of hull shape check with misalignments and deviations of real hull with as-built data.

Transferring mesh to CAD and NURB



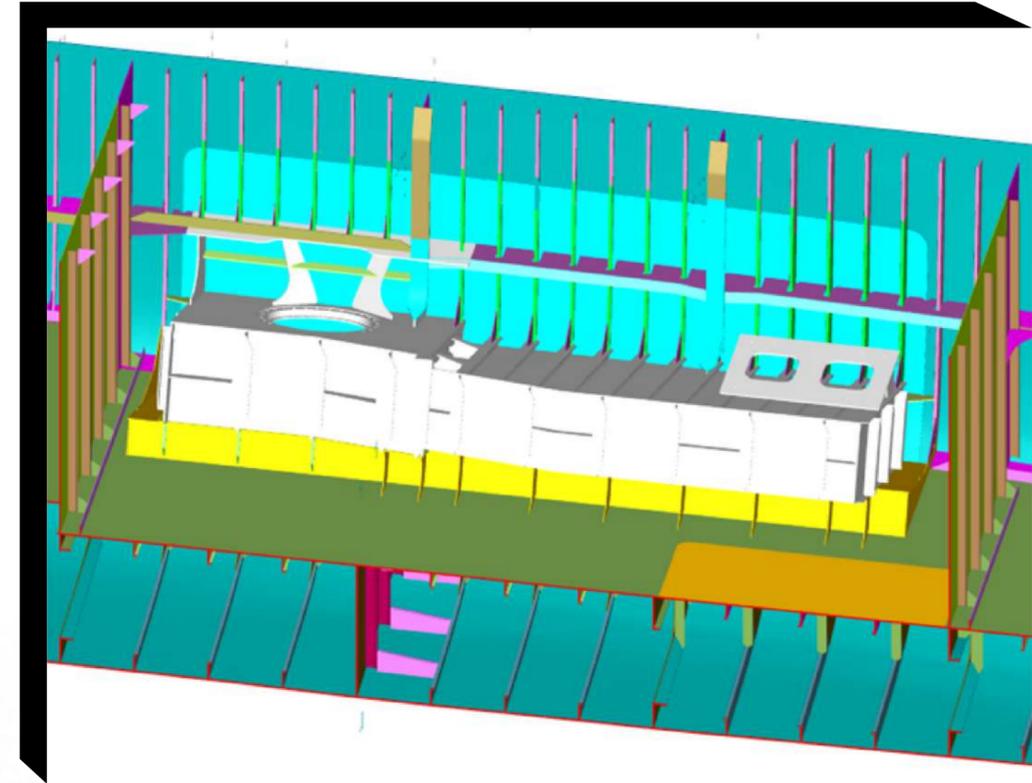
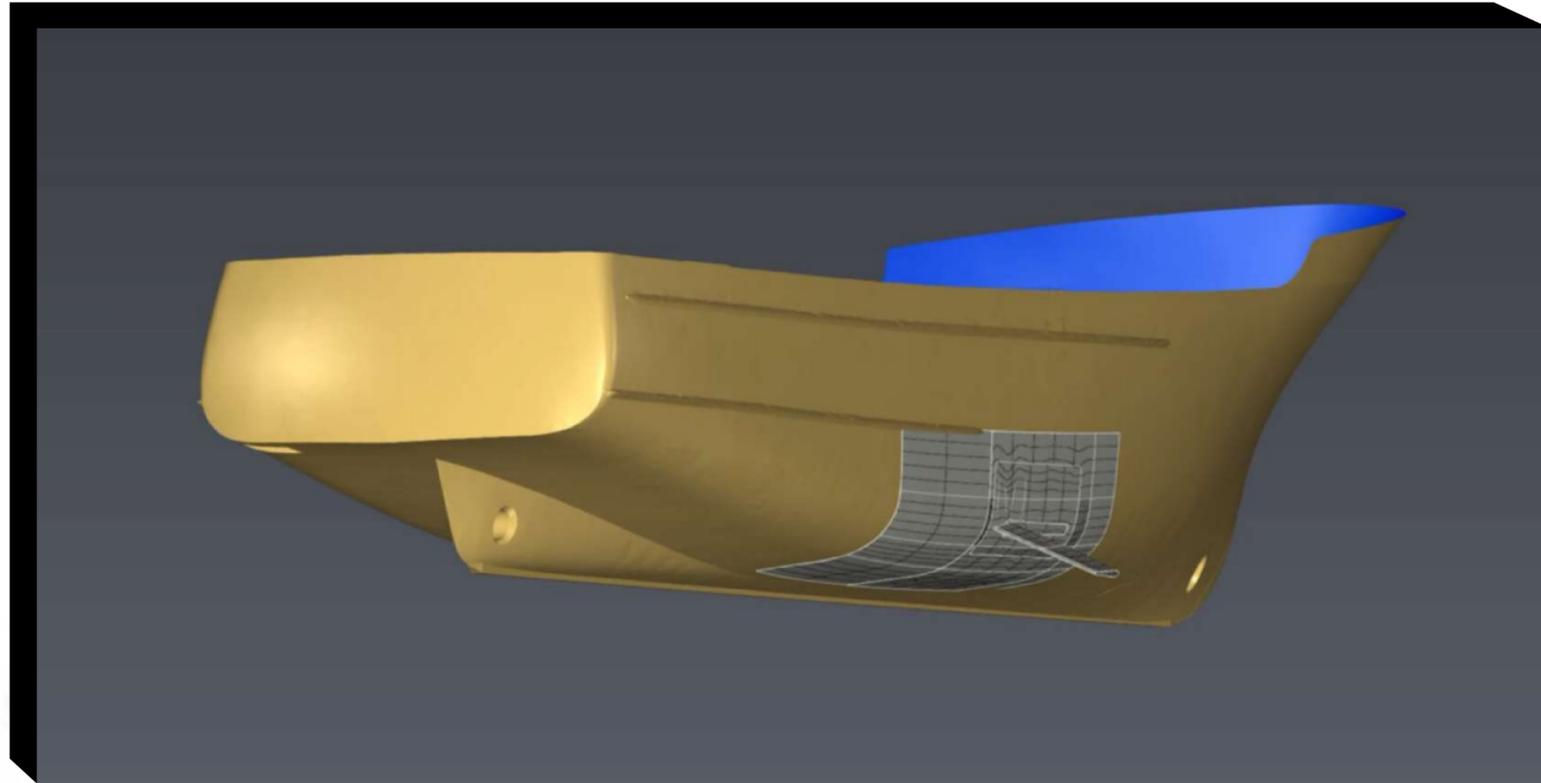
At this stage mesh body is converted to CAD and NURB for engineering purposes and further project development based on real hull shape and construction.

Structural design and integration of stern platform



- Modeling and integration of new swim platform based on hull real shape obtained from CAD / NURB
- Scantling design and FEM calculations
- Interference check of additional construction with existing outfitting and accessories at the aft part

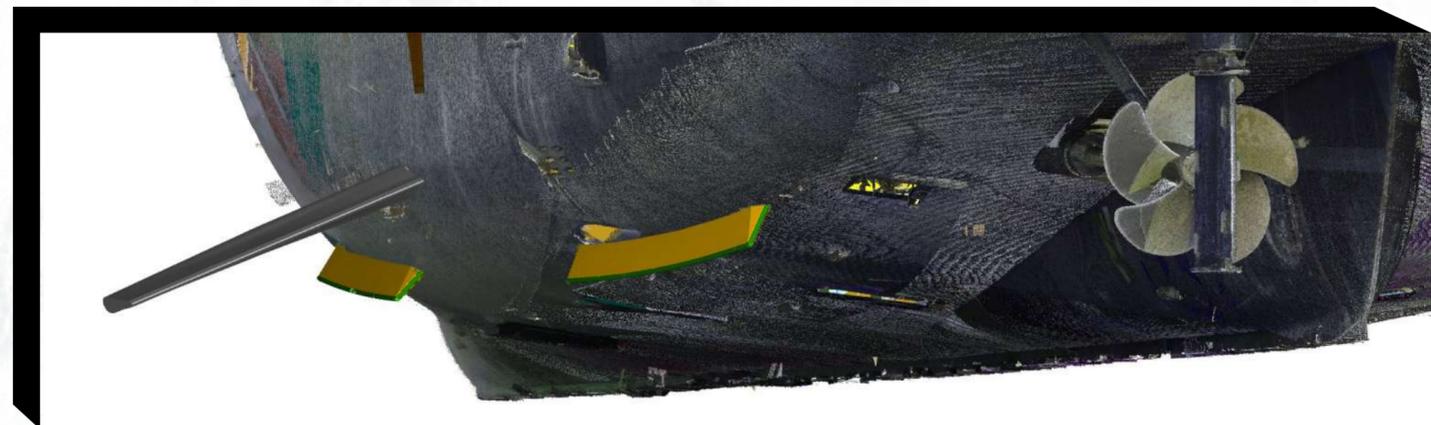
Installation of new retractable stabilizing system



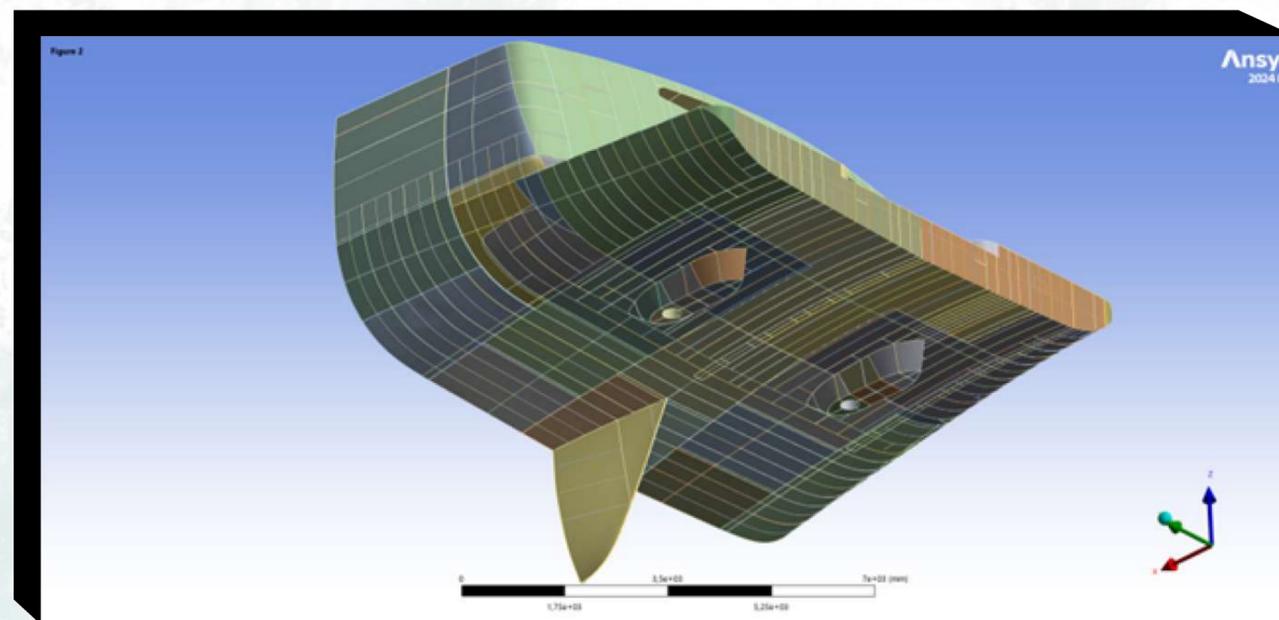
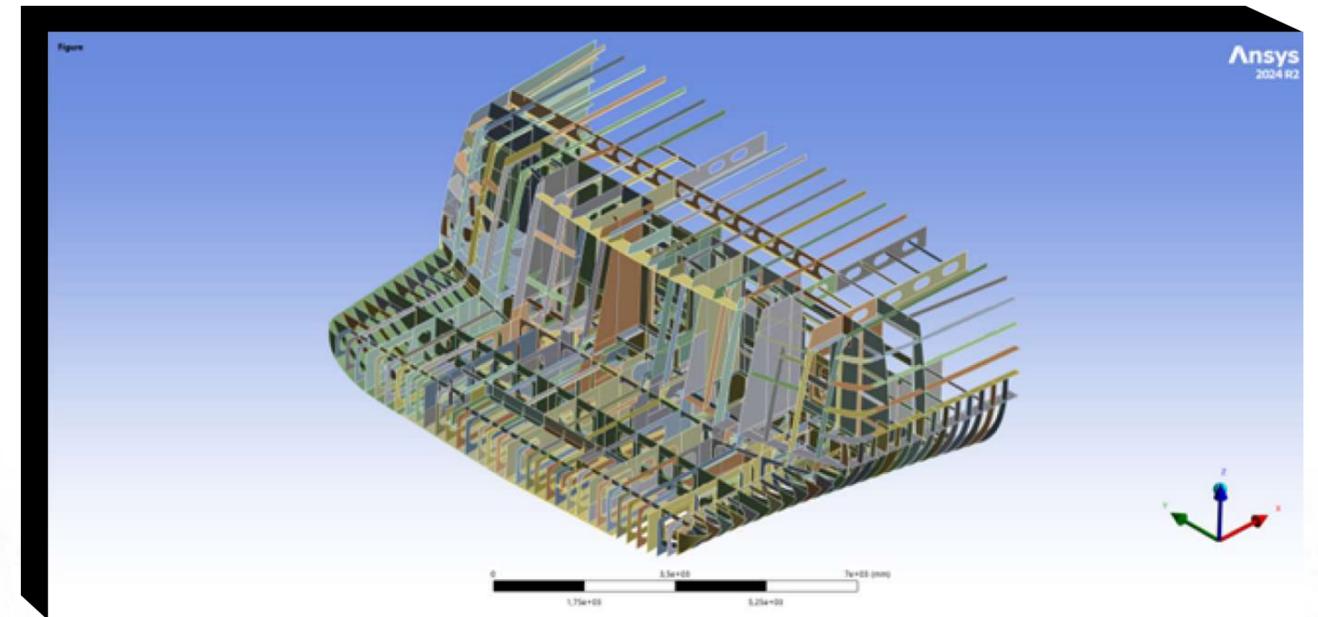
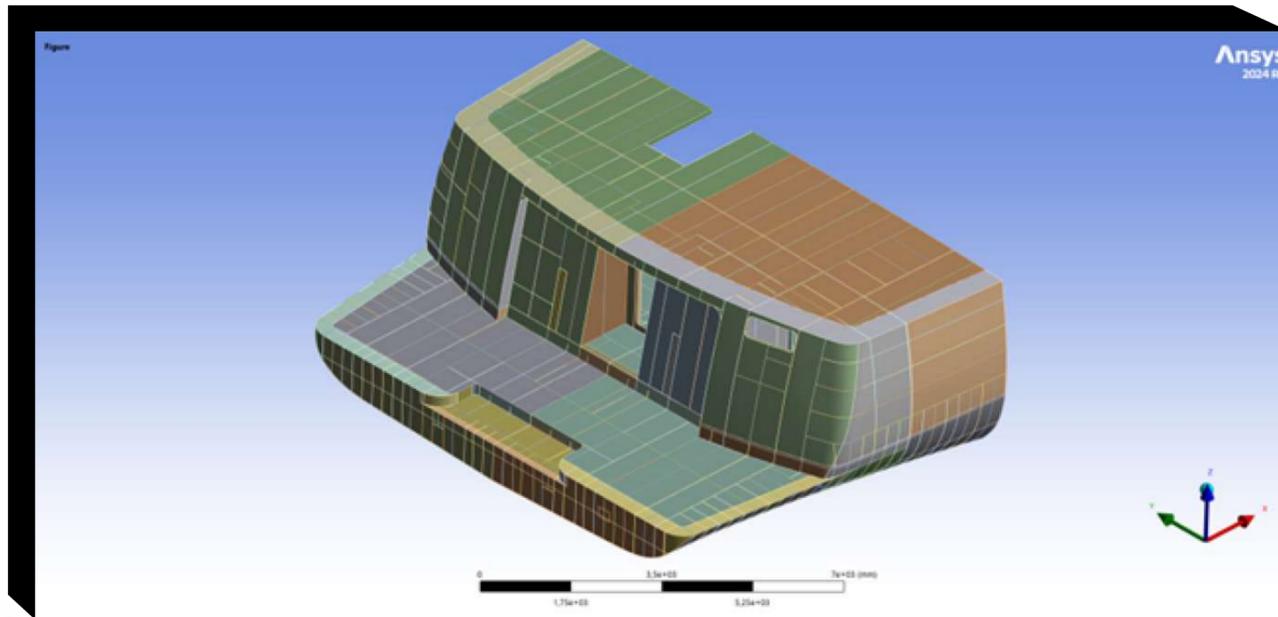
Arrangement of new retractable stabilizing system for further FEM calculations

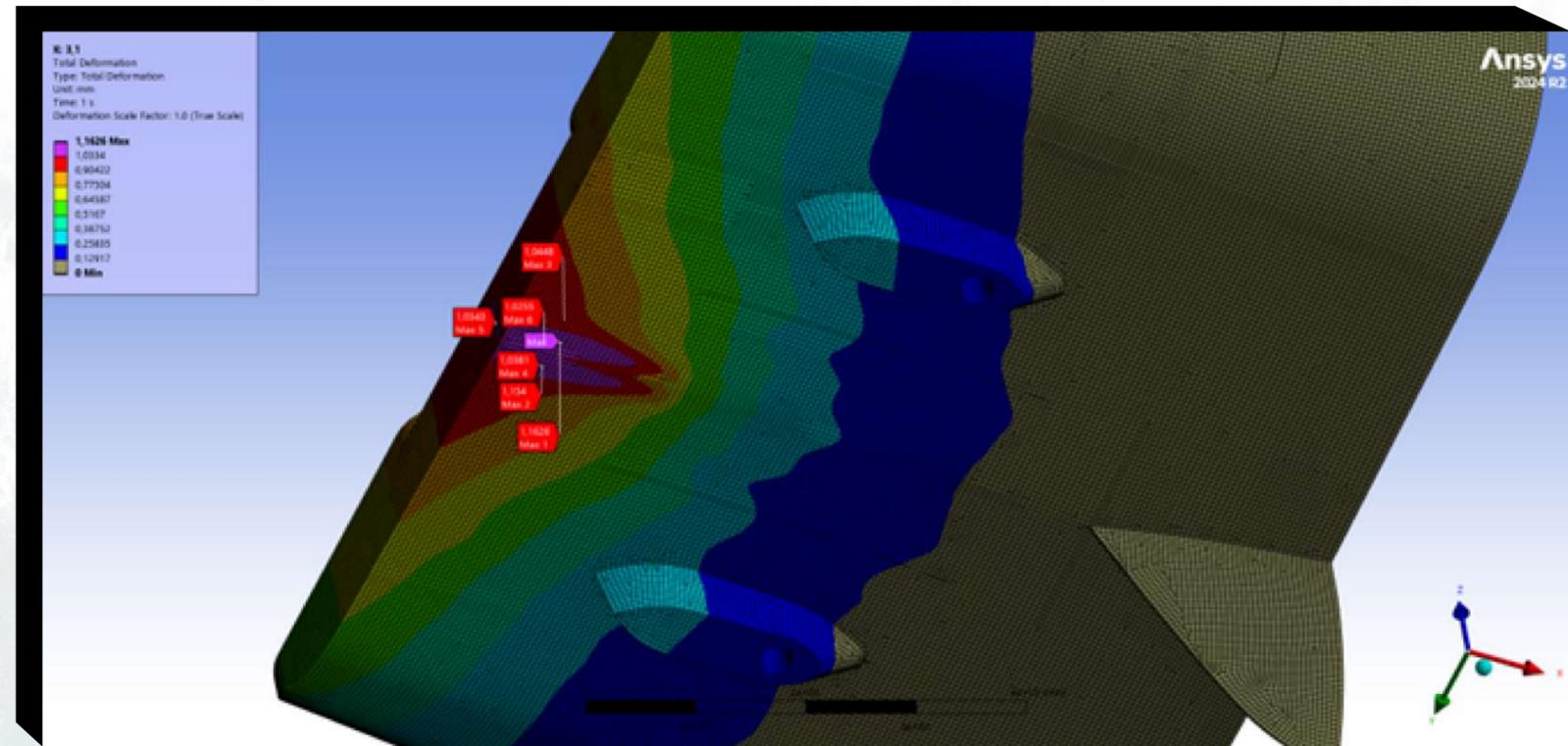
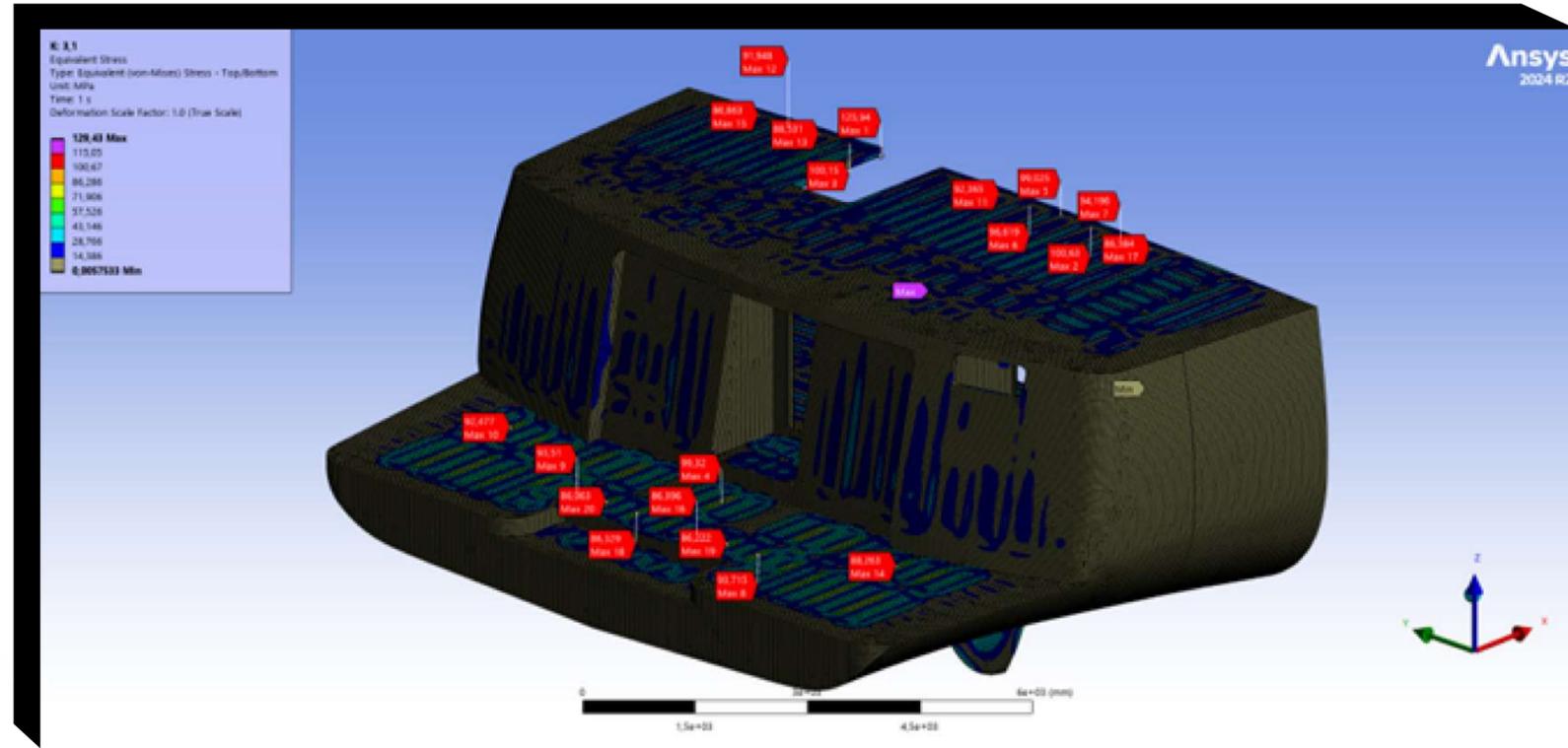
Modeling and modification of existing structural design in area of new installation

Modeling and structural design for new bilge keels

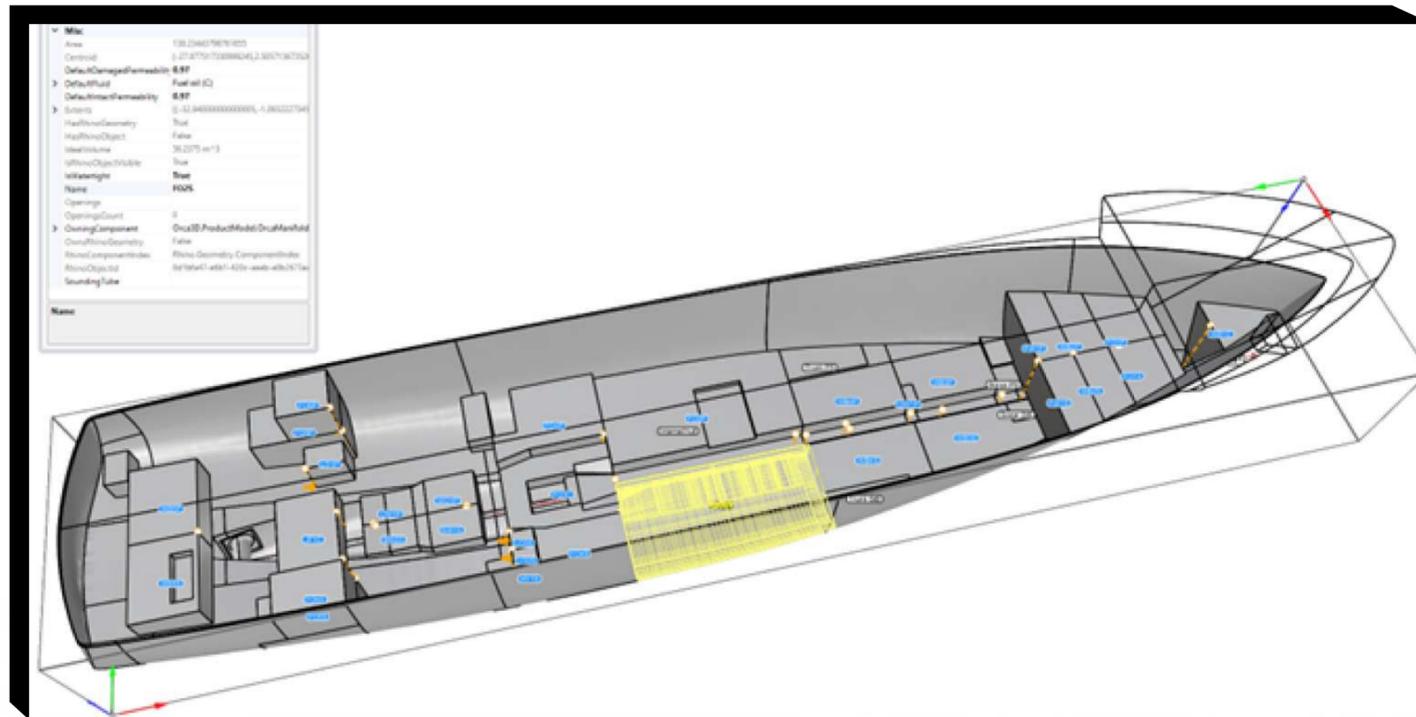


Integration of CAD / Mesh / NURBS models for FEM structural analysis



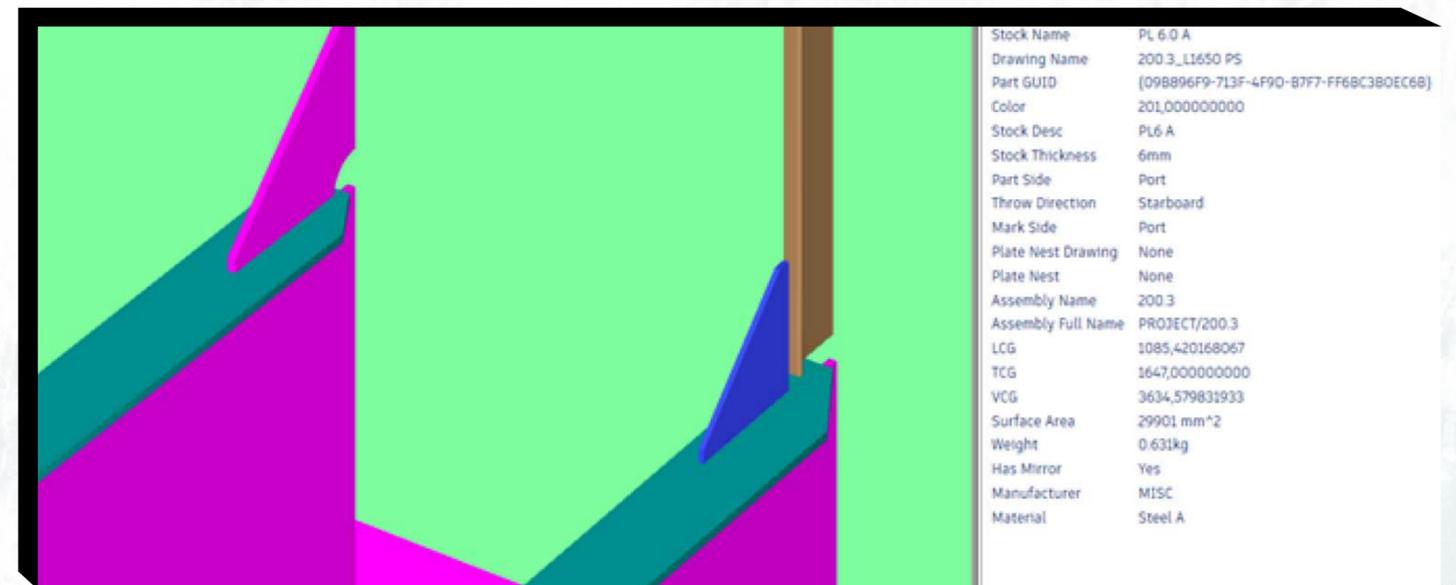


Weight estimation and stability assessment

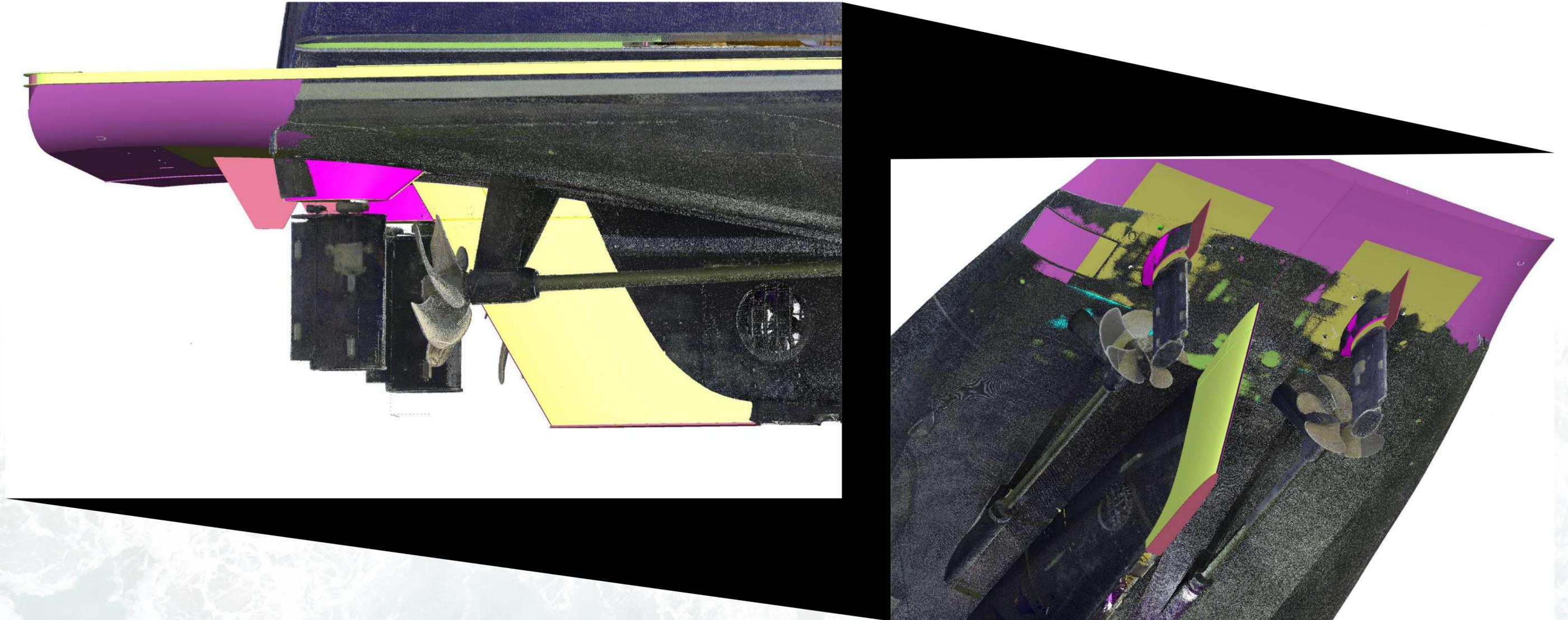


Weight estimation based on reports after 3D modelling with precise and accurate values of COG and weight of each detail.

Performing stability assessment and gathering of tank data, using the actual 3D scanned hull and tank geometry after planned refit works.



Skeg extension





AMG Arcadia Maritime Group B.V.

 Bulgaria

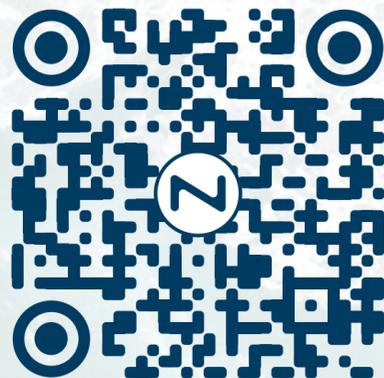
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