

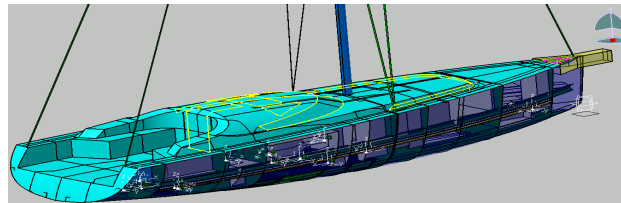


Naval architecture solution for CATIA V5 integrated boat design



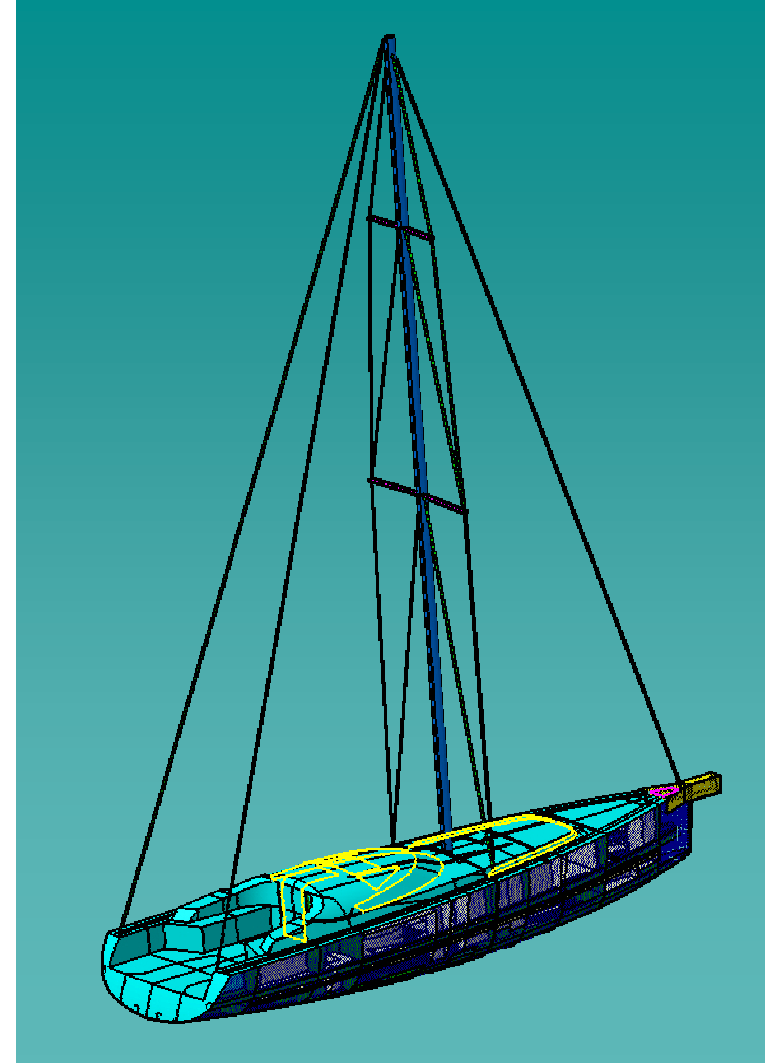
Headlines

- Product description
- Position in boat design process
- Naval Architect product
- Product highlights
- Customer benefit
- Summary



Product description

- **Solution for preliminary boat design**
 - Naval Architect is a dedicated solution for the early design process of boats and yachts.
 - Key features of this solution are weight management and real time hydrostatic analysis
 - The solution is specifically meant for naval architects and marine engineers, working in the preliminary design phase
- Target market
 - Yacht design
 - Small and medium size boat design
 - Off shore industry



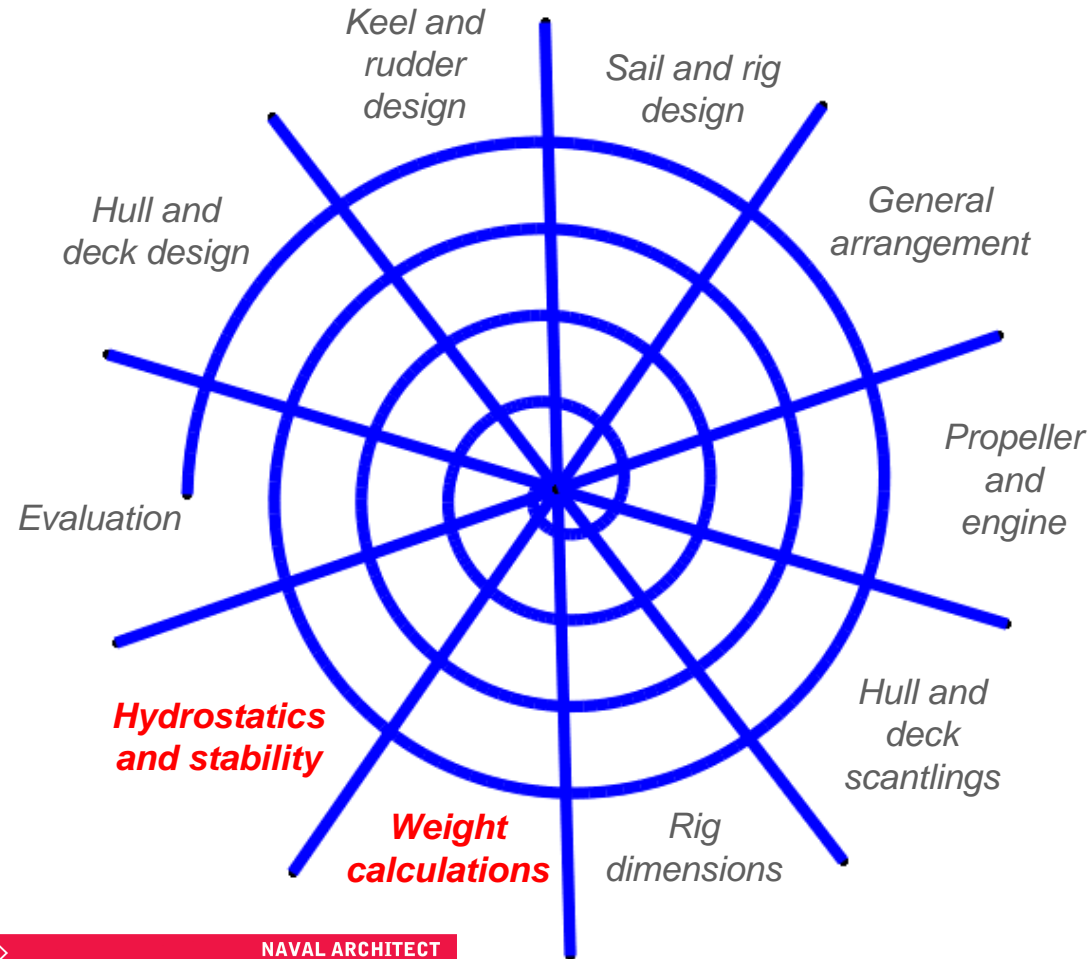
cenit
SOFTWARE

NAVAL ARCHITECT

Position in boat design process



Iterative process along the design spiral *



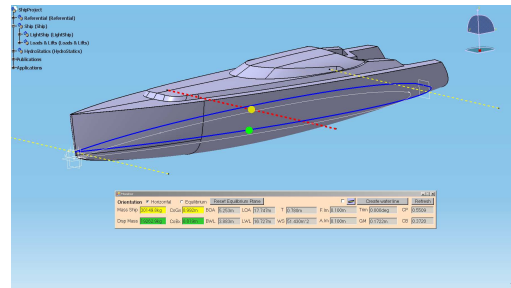
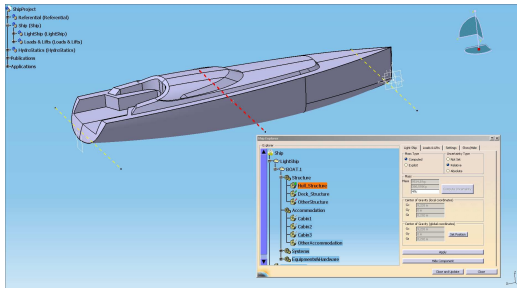
* Source: Principles of Yacht Design by Lars Larsson and Rolf E Eliasson

Naval Architect product

Weight and Center of Gravity management

Preliminary hydrostatic analysis for hull design

Interface with 3rd party software



Advanced hydrostatic and stability analysis

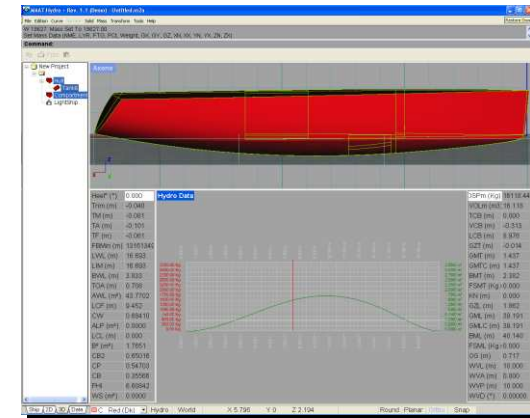
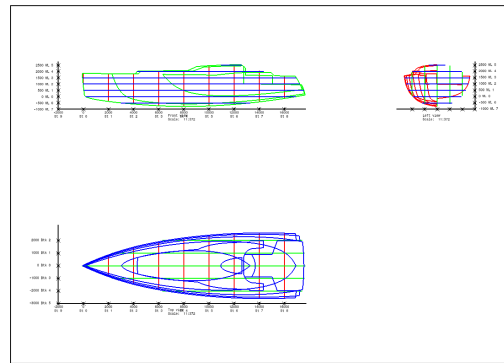
Maat Hydro +

Generate Weight Report

Generate hull section drawing

Weight Report

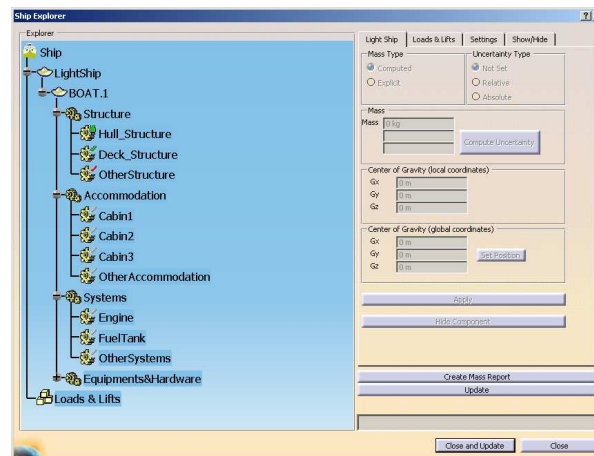
Name	Mass / Kg	Source	Center of Gravity			Uncertainty / %
			X	Y	Z	
Ship	86849	computed	8,67089	0	0,20049	0
LightShip	86849	computed	8,67089	0	0,20049	0
Structure	11460	computed	9,39677	0	0,47725	0
Hull Structure	9514,1	computed	9,20313	0	0,29225	6
Deck Structure	1300	explicit	11,0608	0	1,72045	0
OtherStructure	646	explicit	8,9	0	0,7	10
Accommodation	3546	computed	9,51889	0	0,76103	0
Cabin1	356	explicit	4	0	1,1	0
Cabin2	520	explicit	13	0	0,8	0
Cabin3	440	explicit	12,5	0	0,75	0
OtherAccommodation	2230	explicit	9	0	0,7	0
Systems	63480	computed	8,49905	0	0,00101	0
Engine	280	explicit	9	0	-0,2	0
FuelTank	200	explicit	7,5	0	0,6	0
OtherSystems	63000	explicit	8,5	0	0	0
Equipments&Hardware	8363	computed	8,61892	0	1,09779	0
DeckHardware	1363	explicit	10	0	1,6	0
Rigging	700	explicit	7	0	10	0
AppendixKeel	6300	explicit	8,5	0	0	0
Loads & Uts	0	computed	0	0	0	0



Product highlights

- Weight maturity management
 - Ship Explorer browser
 - Light ship weight maturity management
 - Easy control of tank filling and loading state

Name	Mass	Source	Center of Gravity			Uncertainty
			X	Y	Z	
Ship_Project	1000	computed	0.01	0.02	0.03	0
SEM_1	1000	computed	0.01	0.02	0.03	0
Structure	1000	computed	0.01	0.02	0.03	0
Hull_Shell	0	computed	0	0	0	0
HullStructure&Bulkheads	1000	explicit	0.01	0.02	0.03	0
HullDecks	1e-006	computed	0.0005	0.0005	0.0005	0
DeckHouseStructure	1e-006	computed	0.0005	0.0005	0.0005	0
SpecialStructure	1e-006	computed	0.0005	0.0005	0.0005	0
Masts	1e-006	computed	0.0005	0.0005	0.0005	0
Foundations	7e-006	computed	0.0005	0.0005	0.0005	0
HullStructureFoundation	1e-006	computed	0.0005	0.0005	0.0005	0
PropulsionPlantFoundation	1e-006	computed	0.0005	0.0005	0.0005	0
ElectricPlantFoundation	1e-006	computed	0.0005	0.0005	0.0005	0
CommandFoundation	1e-006	computed	0.0005	0.0005	0.0005	0
AuxiliaryFoundation	1e-006	computed	0.0005	0.0005	0.0005	0
OutfittingFoundation	1e-006	computed	0.0005	0.0005	0.0005	0
ArmamentFoundation	1e-006	computed	0.0005	0.0005	0.0005	0
Propulsion	1e-006	computed	0.0005	0.0005	0.0005	0
Electric	1e-006	computed	0.0005	0.0005	0.0005	0
Command	1e-006	computed	0.0005	0.0005	0.0005	0
Auxiliary	1e-006	computed	0.0005	0.0005	0.0005	0
Armament	1e-006	computed	0.0005	0.0005	0.0005	0

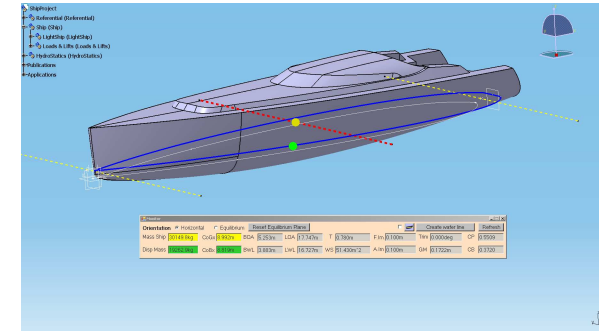


Features

- Detailed overview of the weight distribution
- Browsing through the boat project
- Classification, Definition and Analysis of weight distribution

Product highlights

- Preliminary hydrostatic analysis
 - Providing results of weight or hull form modifications
 - Boat position at equilibrium in real time



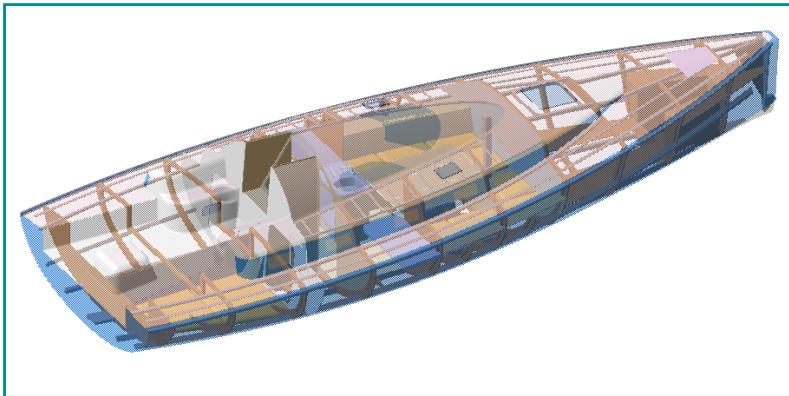
Monitor															
Orientation		Horizontal		Equilibrium		Reset Equilibrium Plane						Create water line		Refresh	
Mass Ship	30149.8kg	CoGx	8.992m	BOA	5.253m	LOA	17.757m	T	1.002m	F.Im	-0.166m	Trim	-0.337deg	CP	0.5709
Disp Mass	30150.5kg	CoBx	9.001m	BWL	4.223m	LWL	17.593m	WS	63.692m ²	A.Im	-0.068m	GM	0.0000m	CB	0.3962

Real-time Values

- Mass of the hull
- Displaced Mass
- Center of Gravity and Center of Buoyancy
- Prismatic and Block Coefficient
- ...

Product highlights

- **Hydro model**
 - Packaging and space reservation
 - Assignment of properties of components for hydrostatic and stability analysis



Properties

- Permeability
- Content
- Filling ratio
- Mass

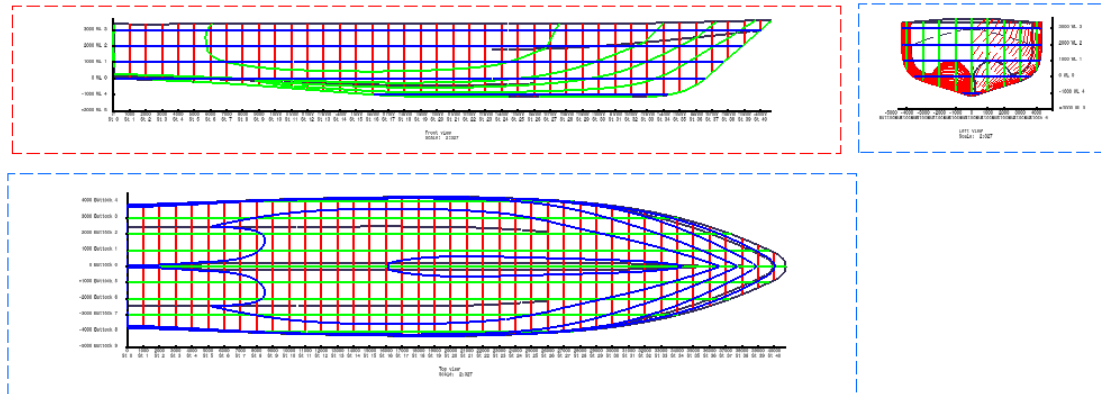
Hydro Components

- Compartment
- Tank
- Variable load
- Hull opening
- Free board
- ...

Product highlights

- Hull section drawing

- Automated generation of the hull section drawing

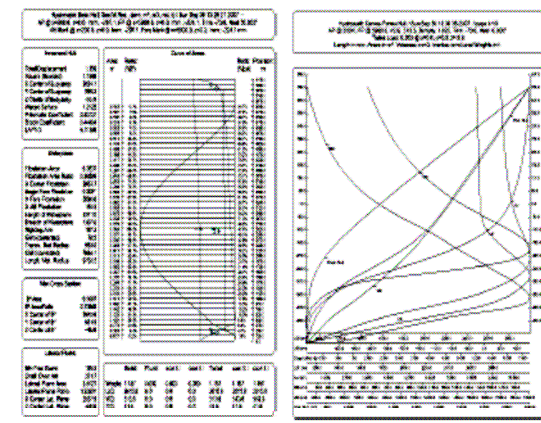
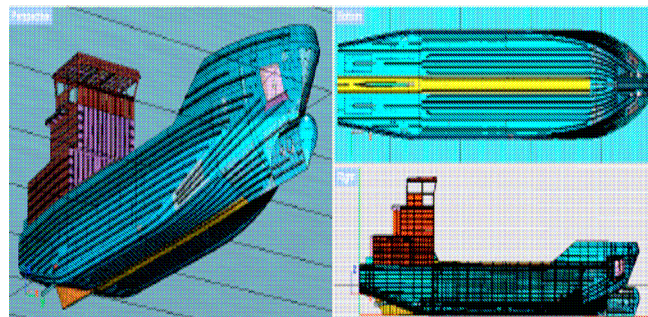


Features

- Drawing standard
- Stations
- Buttocks
- Waterlines

Product highlights

- Interface with MAAT Hydro+ (product by Siste)
 - Direct data exchange of 3D geometry of boat structure with hydro characteristics
 - Direct start-up of MH+ from inside CATIA V5
 - Link between CATIA V5 and MH+ session

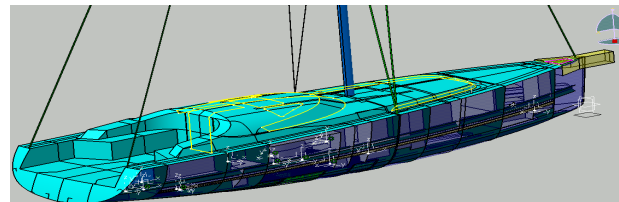


Advanced Hydrostatic and Stability Analysis

- Loading cases
- Reports

Customer benefit

- **Dedicated CATIA V5 solution for weight management and hydrostatic analysis**
 - No interfaces or redundancy of data and information
- **Associative and update compatible**
- **Uniform design process through use of template project structure**
- **Data consistency with one set of design data throughout the whole process**



Summary

- **CENIT Naval Architect**
 - Dedicated solution for weight management and preliminary hydrostatic analysis in early design phase
 - Interface to MAAT Hydro+ for hydrostatic models
- **Customer benefit**
 - Integrated CATIA V5 solution for the naval architect design process
 - Uniform design process
 - Data consistency throughout the design process; associative and update compatible
- **Offerings**
 - Software and implementation support
 - Customisation



Thank you for your attention!

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