



Hamworthy Baltic Design Centre

Ship Design and Consulting Services



ship design and consulting services

We offer a combination of experience, expertise and innovation in ship design



Car carrier (1300 cars)

Hamworthy Baltic Design Centre was established by a group of naval architects and engineers who are constantly developing and increasing their market presence.

Our experienced team consists exclusively of naval architects and designers of all specialisations, whom are all qualified technical university graduates with at least 10 years experience working in major shipyard design offices in Poland.

Our designers have successfully cooperated with owners from Scandinavia (Stena, Bergesen, Finnlines, Hoegh, Wallenius - Wilhelmsen, B&N Nordsjofrakt), Germany (Doehle, Rickmers), Japan (K-line, NYK), Vietnam (Vinashin) and many others. During the basic design stage we closely cooperate with major Class Societies such as DNV, GL, ABS, BV and others.

Hamworthy Baltic Design Centre employ specialists in the following fields:

- Naval Architecture
- Hull Construction
- Machinery and Piping
- Deck Outfitting
- HVAC
- Strength Calculations



design expertise

Our main objective is to deliver the best possible design solutions to owners and shipyards



Hamworthy Baltic Design Centre's main area of expertise comprises crude oil tankers, LPG gas carriers, chemical & product carriers, bulkers and multipurpose bulk carriers, container vessels, car carriers and ro-ro vessels. We are also experienced in designing typical offshore vessels like PSV (platform supply vessels) and seismic vessels.



Apart from creating ship designs Hamworthy Baltic Design Centre are also fully prepared to carry out specific naval architectural tasks such as FMEA (Failure Modes and Effect Analysis), intact and damage stability calculations etc. We also act as owners' representatives during newbuilding construction.

We offer design of the following vessels:

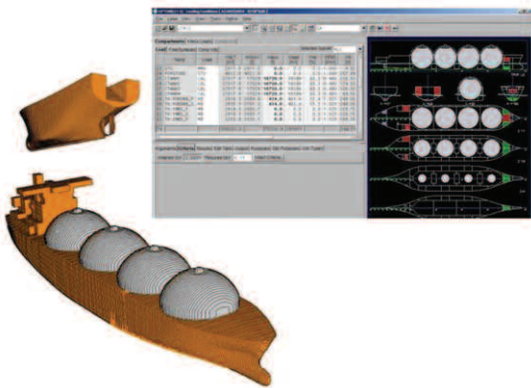


- Bulk carriers
- Car carriers and ro-ro
- Container vessels
- Gas carriers
- Offshore
- Tanker and chemical carriers

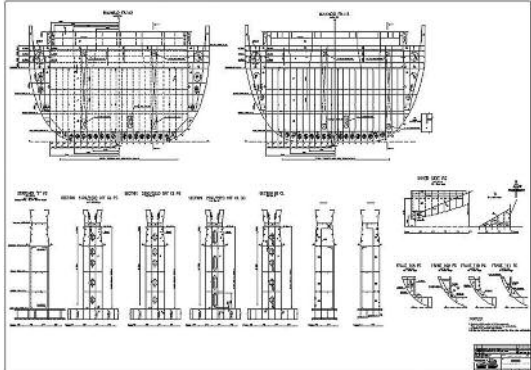


design stages

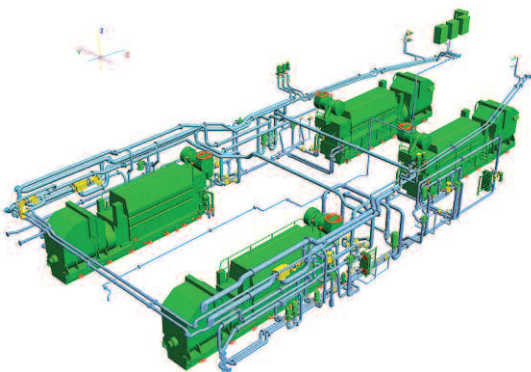
We offer both complex design of vessels as well as individual design stages such as initial, contractual, classification and detailed



Example of System NAPA (conceptual and contractual design)



Example of bulkhead drawings (basic/classification design)



Example of fresh water cooling system (detailed design)

Initial and contractual design

The documentation in the initial and contractual stage includes drawings and calculations used for describing general characteristics of the vessel; speed, capacity, fuel consumption, etc. At this stage the basic systems and mechanisms of a ship are also agreed. Most popular computer system used at contractual stage is 'NAPA' (shown in the image to the left). The most important documents prepared at this stage include:

- General arrangement plan
- Technical specification
- Tank plan
- Light ship calculation

Basic/classification design

The documentation in the basic (classification) stage includes drawings and calculations used to gain the approval of the Classification Society. At this stage the drawings are usually prepared with the use of 'AutoCAD' (or similar) and 'NAPA'. During the basic design stage we closely cooperate with major class societies such as DNV, GL, ABS, BV and others.

Detailed design

Detailed documentation includes drawings and other documents indispensable for prefabricating and assembling the vessel (lifting documentation of hull, isometric drawings of piping installations, etc.). Usually at the detailed design stage the 3D model of the vessel is prepared including a coordination model of the engine room and cargo installations (tankers). The 3D models are prepared with the use of dedicated computer systems (CAD) such as 'Tribon', 'Nupas CADMATIC', 'Bentley AutoPlant' or 'Foran'. From such models the documentation of specific regions and groups are then generated.

calculations and analysis

We offer a full spectre of calculations and structural analysis for both ship design and onshore construction

Software used:

FEM analysis

ANSYS

FEMAP

SEZAM

Class calculations

POSEIDON (GL)

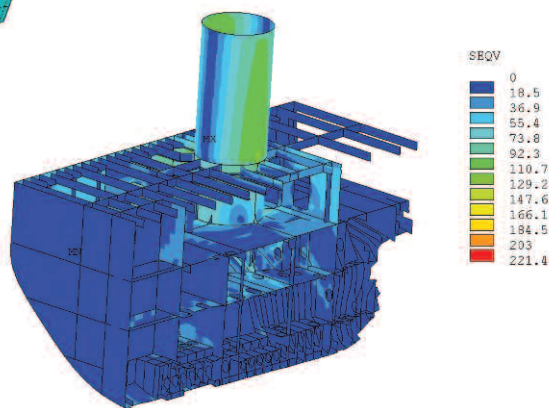
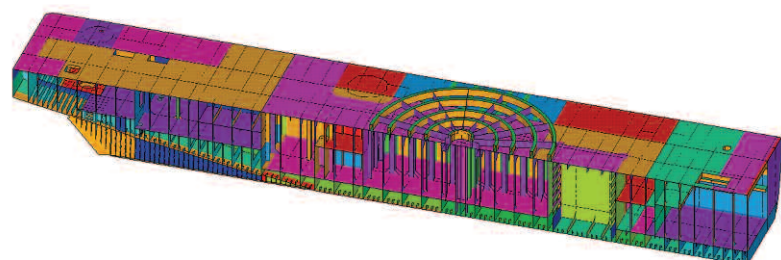
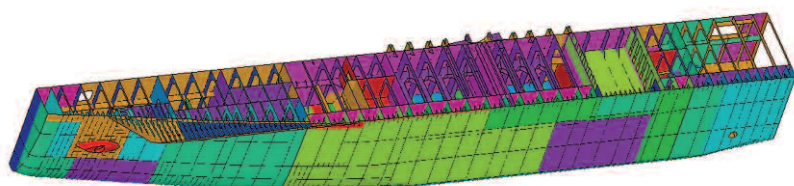
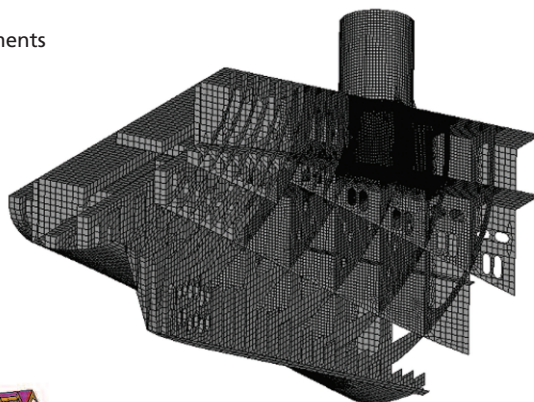
NAUTICUS (DNV)

MARS (BV)

RULLCALC (LR)

FEM Analysis

- Plate models of hulls, strength analysis including Class requirements
- Class required calculations
- FEM analysis of structures other than vessels (offshore)



Typical examples of FEM analysis

conversions

At present conversions of vessels constitute an integral part of the global shipbuilding market. Most of these conversions concern fishing vessels converted to offshore vessels and tankers converted to FPSOs.

Conversion case study



Fishing trawler 'Polar Timmiarmiut'

Hamworthy Baltic Design Centre have recently completed a conversion carried out at the Nauta Shiprepair Yard in Gdynia, Poland. On order of the Norwegian Owner **BOS A.S.**, Hamworthy Baltic Design Centre completed the basic/class, and detailed documentation, for conversion of the fishing trawler '*Polar Timmiarmiut*' into the seismic vessel '*Bos Atlantic*'.

The design process consisted of basic/class and detailed stages. At times more than 30 designers were involved, producing in the effect 117 classification drawings, over 266 workshop drawings each with its own material list and numerous other documentation. The design took approximately five months to complete and was created in AutoCAD. Apart from undertaking the supervision of the entire construction, Hamworthy Baltic Design Centre had also prepared stability information using the NAPA system and later supervised the execution of inclining test, including the preparation of final reports.



Seismic vessel 'Bos Atlantic'



Recently completed and ongoing projects

Ro-Pax 400 passengers, 2400 lm - LNG fuelled
Basic Design - HBDC R&D project

LPG/NH₃/VCM Carrier 35 000 cbm
3D Model and detail documentation of Cargo Handling System - *Hamworthy Gas Systems AS*

LNG Plant
3D Model and workshop documentation - *Hamworthy Gas Systems AS*

PSV - LNG fuelled
Basic Design - HBDC R&D project

BOS ANGLER - Seismic Vessel
Owner's representative/design assist during conversion of 2D seismic vessel into 3D seismic vessel - *Bergen Oilfield Services*

LNG carrier 10 000 cbm
Basic Design - *Hamworthy Gas Systems AS*

LNG carrier 2 000 cbm
Basic Design - *Hamworthy Gas Systems AS*

LEG/LPG/NH₃ carrier 7000 cbm
Basic Design - *Hamworthy Gas Systems AS*

Multipurpose vessel 7 500 DWT
As built documentation together with stability and longitudinal strength calculations - Shiprepair Yard 'Remontowa' S.A.

Ro/ro car carrier 2200 RT-43 cars
Initial design - *European Owner*

M/V Umgeni ca. 4 000 DWT
Conversion of container vessel into bulk carrier - *Bernhard Schulte Shipmanagement*

Crude Oil Tanker 109 000 DWT
Selected Class drawings - *European design office*

Shrimp Trawler
Coordination of superstructure - *SeaTech Engineering*

Multipurpose Field Support and ROV vessel
Detail documentation - *Galliot*

LPG/NH₃/VCM Carrier 35 000 cbm
3D models and detail documentation of Cargo Handling Skids - *Hamworthy Gas Systems AS*

Dynamic Positioned Shuttle Tanker 46 000 DWT
Class and detail design of Power Station - *Shiprepair Yard 'Remontowa' S.A.*

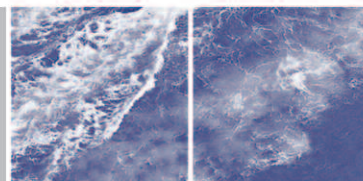
'Bos Atlantic' Seismic Vessel LOA ca. 67m
Class and detail design for conversion of fishing trawler into seismic vessel - Shiprepair Yard 'Nauta' S.A.

Various type of ships
NAPA modeling and calculations - *Lloyd's Register*

Various type of ships
NAPA modeling and calculations - *OSK-ShipTech AS*

LNG/LEG/LPG Carrier 7 500 cbm
Selected class drawings FMEA (Failure Modes and Effect Analysis) - *Shiprepair Yard 'Remontowa' S.A.*

'Skandi Singapore' Diving Support Vessel LOA ca.107m
Diving Support Vessel LOA ca. 107m
Co-operation at selected class drawings (adaptation of AYP design) 3D coordination model of ER & casing arrangement. Detailed design (adaptation of AYP design) - *FMV Norway (DOF Subsea)*



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A subsidiary of Hamworthy plc



The manufacturers reserve the right to alter the specification and data to incorporate improvements in design. Certified drawings will be issued on request.

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