

CONOSHIP NEWSLETTER



Conoship International
Concept designs
Research & Consultancy
Conoship Projects



All design and engineering activities combined.

In this edition of the Conoship Newsletter you will find a brief presentation of the various Conoship departments and activities. Find out how our experienced team of naval architects, engineers and consultants can support you to bring the most challenging ideas in shipbuilding and shipping to a profitable realisation.

Conoship International: Ready to realise your vision

Conoship International is an ambitious and innovative ship design and engineering office. Founded in 1952 as the central design office for a group of Northern Dutch shipyards, Conoship International developed a strikingly wide range of ships, from general cargo vessels, tankers, dredgers, to ferries and offshore vessels. Over 2000 ships were built based on our designs, operating all around the world. We are passionate ship designers supporting our clients in realising their vision during all phases of the shipbuilding process.

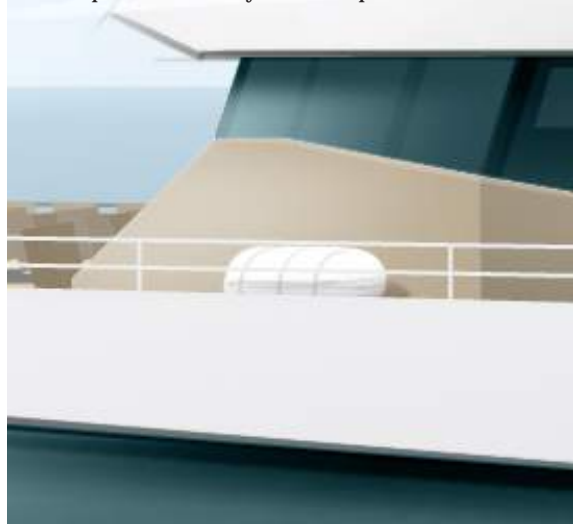
Your vision on maritime business in combination with our knowledge and knowhow on ship design shall result in the best fit for purpose and unique concept to distinguish your activities in your markets, elaborated to the best basic and complete design. Our in-house teams of naval architects and mechanical and structural engineers have the drive and capability of realizing the most challenging complete designs. From the first board sketch up to the delivery of the ship.

is interaction and integration of the various disciplines of ship design and engineering enables Conoship International to create and develop the next level in ship design. We are looking forward to your challenging requirements and to become your partner for your next ship.

A brief overview of the ship development activities of Conoship International:

- Concept ship design
- Basic engineering
- (3D) visualization
- Structural / Detailed engineering
- Mechanical engineering; routing of all ships systems
- System diagrams
- Conversions
- Feasibility studies
- Research & Consultancy
- HAZID / FMECA
- Risk assessments
- Stability calculations
- Speed power / EEDI

Already curious or do you have a challenging idea? Contact us to discuss what Conoship can realise for you!



Source: Conoship International



Source: Flying Focus

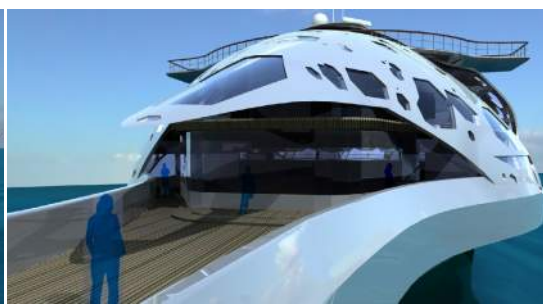
Walk to work SOV vessel "Kroonborg"

Concept ship design

Concept design is one of the core competences of Conoship International. Conoship has an unsurpassed track record as a concept designer of innovative ships including general cargo vessels, tankers, dredgers, ro-ro vessel, passenger vessels and offshore vessels. More of our vessels to be found at our website www.conoship.com.

At Conoship International we are specialized in "moulding" design requirements, rules and regulations and your visions in an optimal ship design. We strongly believe that the most successful designs are made based on a continuous customer involvement during the de-

sign process. As building the same ship as your competitor will not get you very far, innovation based on inside knowledge of your trade is crucial for the design of a profitable, sustainable and competitive vessel. Furthermore, where possible and relevant our concept designs include the results of the numerous research projects in which we participate, e.g. regarding hull and propulsion optimization, LNG, to ensure that your design shall be in the forefront of technology. It is our business to help you realise new opportunities. Over the years this has resulted in a large number of striking concept designs, of which many were a world first at the time of their delivery





Source: Global Seatrade

Hatchcoverless / Open top M2 Runner "Oceanic"

Examples of Concept designs

A clear example of our design approach for innovative concept designs is the design of the Hartman M2 Runner ("Oceanic series") as developed in close co-operation with Hartman Shipbuilding and Hartman Marine. Developed with an emphasis on transporting project cargo, such as offshore wind turbine parts, these 3285 dwt vessels of less than 3000 GT, have a deck area equal to that of much larger 6000 dwt vessels. To achieve this, the layout of a traditional project cargo carrier was substantially altered and innovative solutions were applied to meet all rules and regulations.

Another example of our forward-thinking concept design, is the design of the "Easymax series" (lead Vessel "Egbert Wagenborg"), jointly developed with Wagenborg Shipping and shipyard Royal Niestern Sander. As the yard is bounded by very strict building limitations regarding length and width (i.e. due to its location behind a lock), a number of innovative measures were required to meet the owner's requirements regarding cargo intake, hold capacity and fuel consumption, without a major increase of the overall dimensions. The concept design resulted in a vessel with an ultra-low Energy Efficiency

Design Index (EEDI) combined with a very large hold volume and deadweight considering the size of the vessel. Besides that, it is one of the largest general cargo vessels which is allowed to operate without hatchcovers.

A very recent innovative concept is the design for a 2000 TEU Baltic and Bangkok MAX container feeder. The concept is based on a substantially different approach concerning operational speeds, resulting in an unrivalled fuel consumption per TEU. This design is further prepared for on-going developments in environmental regulations, as it has the option to strongly reduce its emission to air when operation in densely populated areas such as Bangkok, Hamburg, Rotterdam or Shanghai.

Most of all an example of an out of the box concept is the design for a luxury cruise vessel developed based on the interaction with a leisure specialist and futurologist.

The vessel features an innovative hull form maximizing the comfort on board in combination with extremely large and luxurious cabins. Furthermore the styling of this vessel is unique, and has never been seen in shipbuilding and commercial shipping.

14.200 tdw Easy Max "Egbert Wagenborg"



Source: Wagenborg Shipping

Conoship Research & Consultancy:

our focus is “eCONOlogical”

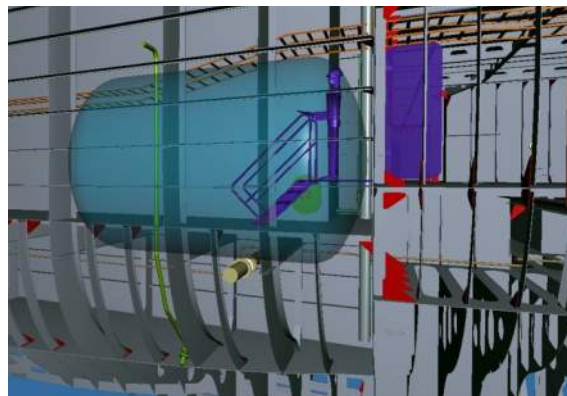
We have a strong focus on Research and Development, to stay at the fore-front of developments in Maritime Technology and to apply the latest innovations in our ship designs and consultancy services. Innovation is considered to be an elementary part of a Conoship-design: the most proper and beneficial way to distinguish our new designs from existing vessels. Most of our new vessels are based on “proven designs” but are always designed to achieve a great added value, for example new “eCONOlogical” improvement of operational issues. We believe that all of our newly gained experience should lead to further optimization, if possible in logical solutions that combine “eCONOMy & eCOlogy”. Saving both money and the environment is what we consider “eCONOlogical”, with applications for example in:

- Fuel-saving a ship-design “ConoDuctTail[®]”, based on integrated CFD-analysis.
- Wind-assisted propulsion with “eCONOWind[®] Unit”, easy to fit on existing cargo vessels, leading to fuel-savings of 20 to 40 %.
- Slow-steaming “eCONOProp”-analysis, to investigate possible fuel-savings at (reduced) eco-speed by adapting the propulsion-system of existing vessels.
- LNG-propulsion for Dredgers and Short Sea Shipping.

With our department “**Conoship Research & Consultancy**”, we initiate and participate in various research projects for Conoship International, partners and clients, both on regional (INterReg Northern Netherlands & Germany), national and European level in the Horizon 2020-program. Our aim in these R&D-projects is contribute to the development of prototypes and apply the innovations in the new designs for our “early adapting clients”. In EU-projects we cooperate with Dutch partners such as MARIN (Maritime Research Institute), TNO and Delft University of Technology and European partners like Rolls Royce, Wärtsilä, Lloyds Register, Meyer Werft and many others.

Conoship Research & Consultancy is searching and developing knowledge and knowhow in a range of various disciplines, for example:

- Computational Fluid Dynamics (CFD) analysis for hull lines optimization;

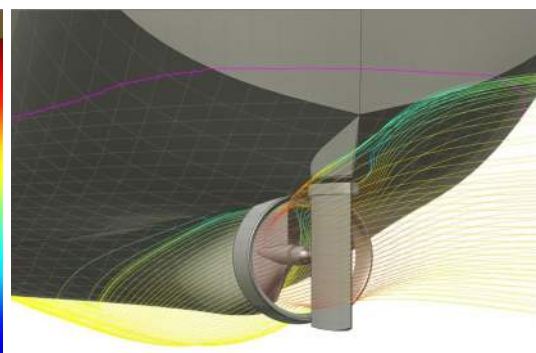
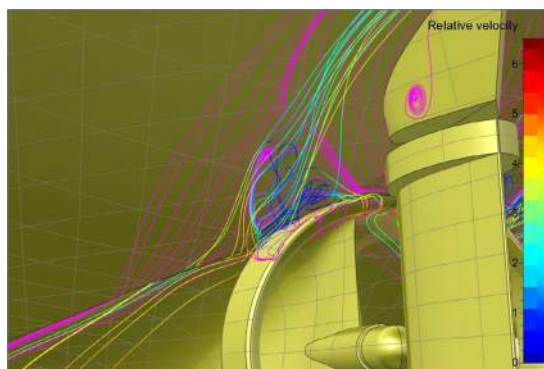
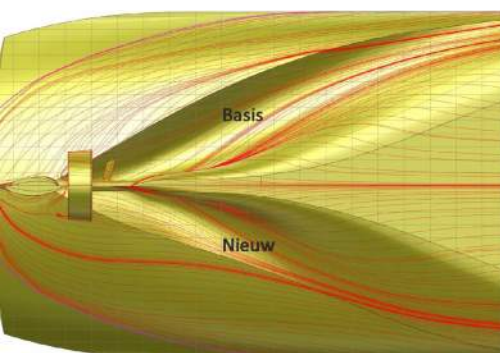


LNG tank integrated in 3D engineering model in CADMATIC

- Hazard Identification (HAZID) studies and Failure Mode Effect Critical Analysis (FMECA) for LNG applications in vessels.
- Feasibility studies for applications such as: LNG, Methanol, Scrubber, SCR, Hydrogen, electrical for fleet owners.
- Fleet development strategies and new ship-concept-development for shipowners.
- Propeller design and optimization in relation to hull design, considering aspects like ventilation, shallow water, Ice class & Polar Class design.
- Wind assisted propulsion for cargo ships, both developing the eCONOWind[®]-unit and the related aspects of stability, trim and draught.
- Draught and deadweight increase of existing general cargo vessels by application of new load line regulations and probabilistic damage stability.
- “Hatchcoverless / Open top” studies for newbuilt and existing general cargo and project cargo vessels, supported by model testing.

Our goal is to spot, develop and create new knowledge, innovations and possible applications for the Maritime Industry to provide our challenging clients with the best possible solutions for their new designs.

A clear example of the activities of Conoship Research & Consultancy is the process leading to the newbuilding project for the dual fuelled (MGO and LNG) 5500 m³ Trailing





LNG-powered 5500m3 Trailing Suction Hopper Dredger "Ecodelta"

Suction Hopper Dredger "Ecodelta" for the Dutch dredging company Van der Kamp, based in Zwolle:

1. Conoship first initiated in 2013 a national Research-project on "Feasibility of dredging on LNG", realising that maintenance dredgers in City-ports blow their exhaust gases most of the time in an urban environment, so that emission-reduction would really make a difference for this ship type.
2. This led to a feasibility study in 2014/2015 for Van der Kamp, on the technical and economical feasibility of retrofitting their existing dredger "RijnDelta" from diesel-electric to Dual Fuel (MGO and LNG) electric propulsion and dredging. The conclusion of the detailed study on the required modifications to the old vessel was to investigate a newbuilding solution.
3. In 2016 Van der Kamp ordered the complete design and engineering package of the the 5500 m3 Trailing Suction Hopper Dredger "Ecodelta" at Conoship International. Designed in close cooperation with the owner, this vessel is one of the first TSHD's designed to operate on LNG. The design is fully customized on the challenging customer requirements, in order to provide the highest efficiency and effectiveness for the niche markets in which they operate.
4. The HAZID and FMECA analysis on the complete LNG-system and operations are in-house performed by Conoship Research & Consultancy.

Looking for bright ideas and new solutions? Challenge our team to discuss the possibilities.

Hatchcoverless / Open top "Lady Anneke"



Conoship Projects:

developing designs to newbuilding projects

Conoship projects is increasing its activities to the next level in cooperation for our core clients. We receive questions from our clients through Conoship International for new concepts and designs. Most of the time leading to the obvious next questions on where to build, at what price range, and sometimes how to finance. This is where Conoship Projects starts, the project developer as consultants to experienced ship owners and stakeholders in the maritime business, to provide an independent insight in the possibilities of the total scope of your projects.

Business development starts with good ideas and new insights, combined with our strong design knowledge and knowhow. Constant investment in research and development has generated very exciting projects. Conoship is positioned right at the front of technological innovation and holds a very strong relationship with technology system leaders and advises in the choice of technological partners if needed. Interestingly enough the variety of the projects is as large as our design portfolio ranges from small workboats, aluminium passenger catamarans, to general cargo multipurpose vessels, tankers, offshore wind solutions, innovative container vessels, and even futuristic cruise vessels.

Conoship Projects expects that in the near future the market requires a replacement tonnage in the shortsea shipping fleet in the size of 3000 ton deadweight. Therefore we initiated the 3000 ton dwt project together with stakeholders in the market. This is an exciting challenge with regards to size limitations in sea river infrastructure and draught restrictions influenced by the seasons. Example picture shows the first results of our parametric design, that can be adopted to different beam draught and deadweight ratios.

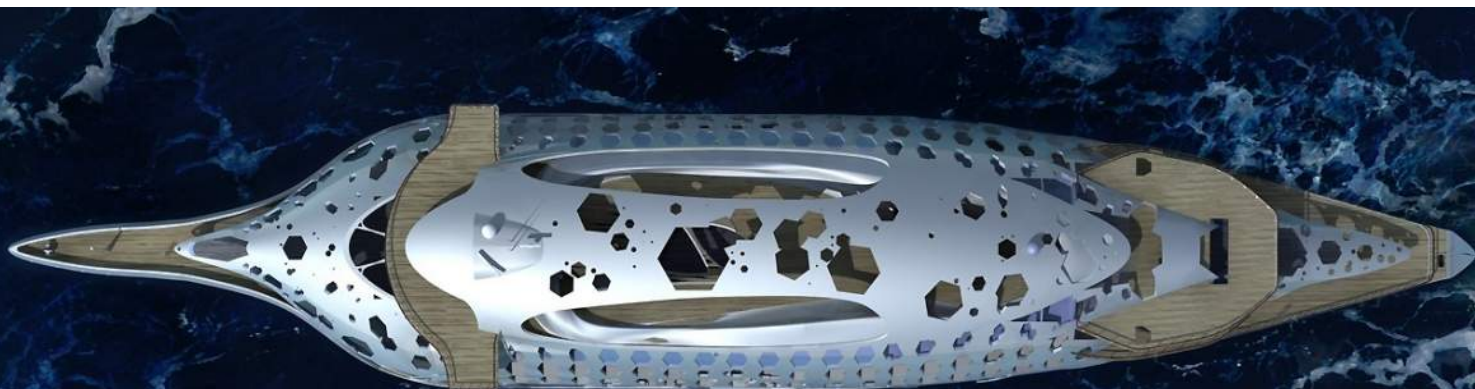
In addition to the above, Conoship Projects can also assure that during the construction period and even in operation our team can assist and report to the client from start to finish. By consulting Conoship Projects our clients experience more control over their projects and



see that the project risks are mitigated, and total cost of ownership reduced.

Presently our team is working intensively on the development of a new fishing vessel, type trawling ship processor. The vessel can modularly be transformed to the owner's future needs to accommodate new products or be able to fish at different fishing grounds. All of course with a minimum environmental impact and a low carbon footprint. In addition, the project team started with the development of a study on a new and exciting type of cruise vessel that originated from Conoship Research & Consultancy and was recently positively picked-up by a new client.

Conoship Projects: Comfort Ferry Cruise





CONOSHIP
INTERNATIONAL

READY TO REALISE YOUR VISION

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