
FINNISH SOLUTIONS FOR A
SUSTAINABLE
SHIP
BUSINESS
FINLAND
#FINLANDWORKS

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WHY FINLAND

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The shipping industry is at a crossroads, facing significant global challenges in meeting international requirements to reduce CO2 emissions and enhance environmental sustainability.

Amidst these challenges, the Finnish maritime industry stands out as a trailblazer, consistently investing in innovation, developing new products and solutions aimed at reducing the marine industry's carbon footprint.

This brochure offers a comprehensive overview of the services and solutions provided by the Finnish maritime industry to lower CO2 emissions in maritime traffic.

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2.1 EQUIPMENTS & SYSTEMS

ALMACO CO2 REFRIGERATION SYSTEMS

ABOUT THE ALMACO CO2 REFRIGERATION SYSTEM

ALMACO provides CO2 refrigeration systems for cruise ships to tackle the environmental regulations and offer alternatives to harmful synthetic refrigerants.

CO_2 refrigeration systems use carbon dioxide (CO_2 or R-744) as the refrigerant to absorb and release heat in a cooling cycle. It offers a lot of advantages :
-It has a global warmth potential of 1
-Requires lower refrigerant charges
-Contributes to energy saving
-Non-ozone-depleting and a natural refrigerant
CO_2 systems often require smaller pipe diameters and equipment footprints, which can reduce material costs and save space, beneficial for applications like marine.

IMPACT ON CO2 EMISSIONS

Using CO_2 (R-744) refrigeration units on cruise ships offers significant environmental and operational benefits compared to traditional hydrofluorocarbon (HFC) systems. CO_2 is a natural refrigerant with a global warmth potential (GWP) of 1, compared to HFCs, which have GWPs ranging from 1,300 to over 4,000.
This drastic reduction in GWP means that CO_2 refrigeration systems help reduce greenhouse gas emissions and align better with stricter environmental regulations aimed at reducing maritime emissions.

Additionally, CO_2 is non-toxic and non-flammable, offering enhanced safety and reducing the need for costly containment and monitoring systems required for some HFCs.

REFERENCES

First ships equipped with CO2 units by ALMACO will set sail in 2027. They will be among the first ships using this technology.

MORE INFORMATION

WWW.ALMACO.CC

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AURAMARINE METHANOL FUEL SUPPLY SYSTEM

ABOUT THE AURAMARINE METHANOL FUEL SUPPLY SYSTEM

The Auramarine Methanol Supply system supplies methanol from the bunkering station to engine inlet whilst and at same time regulating the flow, pressure and temperature of the methanol. All this, combined with filtration, ensures it is suitable for engines and other methanol consumers. The system actively maintains the supply pressure within the specified tolerances during load changes.

- Safe design
- Suitable for engines (both 2-stroke and 4-stroke) and other methanol consumers
- Fulfills rules and regulations
- Also suitable for methanol system retrofits

IMPACT ON CO2 EMISSIONS

Methanol is one of the most viable clean fuels to cut greenhouse gas emissions and help meet global decarbonisation targets.

Full carbon neutrality can be achieved by using “green methanol”. When produced sustainably, biomethanol can offer up to a 100% net reduction in CO_2 emissions.

Methanol also reduces other emissions such as SOx, NOx, and particulates compared to diesel oil.

REFERENCES

Sanmar Shipyard 2024 Kotug dual-fuelled methanol tugs

Jinling Shipyard 2024 Terntank three 15,00 DWT hybrid tankers

Meyer Turku 2023 Mein Schiff 7 cruise vessel

MORE INFORMATION

www.auramarine.com
www.auramarine.com/solutions/methanol
tuomas.hakkinen@auramarine.com +358 40 157 7525

Auramarine methanol fuel supply system June 2024

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AURAMARINE BIOFUEL SUPPLY SYSTEM

ABOUT THE AURAMARINE BIOFUEL SUPPLY SYSTEM

Fuel supply units for main and auxiliary engines

Auramarine delivered first biofuel-ready fuel supply units early in 2010's and continued to develop fuel supply systems to support the uptake of biofuels within the marine energy supply chain.

Specific materials and the correct filtering are required in the design phase of a fuel supply unit to ensure it is prepared for the use of biofuels.

Biofuel supply systems can be supplied for newbuilds and retrofits solutions for existing fleet. Auramarine systems are tailored to all types of biofuels.

IMPACT ON CO2 EMISSIONS

When produced sustainably, biofuels can offer up to a 100% net reduction in CO_2 emissions, effectively making it as a carbon-neutral alternative to fossil fuels.

REFERENCES

Meriaura M/V Meri design and delivery of fuel supply unit for three 1200 kW main engines

BioFlex project with Business Finland, VTT etc.

MORE INFORMATION

www.auramarine.com
www.auramarine.com/solutions/biofuel

tuomas.hakkinen@auramarine.com
+358 40 157 7525

Auramarine biofuel supply system

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AZIPOD® PROPULSION

ABOUT THE SOLUTION

Azipod® propulsion is a gearless steerable propulsion system where the electric drive motor is housed within a pod outside the ship hull. Azipod® units can rotate 360 degrees, increasing maneuverability and operating efficiency of vessel, while cutting fuel consumption by up to 20 percent compared to conventional shaftline systems.

From its creation three decades ago to its market leading position in global shipping today, Azipod® propulsion has revolutionized marine transport with its unparalleled performance, efficiency, sustainability and reliability.

IMPACT ON CO2 EMISSIONS

First seen on the Finnish icegoing vessel Seili in 1991, Azipod® electric propulsion has clocked over 20 million running hours at an impressive availability rate of 99.9 percent, while saving about 1,000,000 tons of fuel in the cruise segment alone.

An independent study by marine consultancy Deltamarin in 2019 showed that Azipod® propulsion could help ferry owners save $1.7 million in annual fuel costs per vessel while cutting CO2 emissions by approximately 10,000 tons.

REFERENCES (if available)

Today, over 35 different vessel types rely on Azipod® technology – from cruise ships to cargo carriers, icebreakers, ferries and superyachts. In total, ABB has sold over 800 Azipod® units over the course of 30 years.

MORE INFORMATION

https://new.abb.com/marine/systems-and-solutions/azipod

EVAC HYDROTREAT®

ABOUT THE SOLUTION

Evac HydroTreat® is a cutting-edge technology transforming the management of organic wet waste onboard vessels. This solution significantly reduces a vessel's environmental footprint by offering a safer, more sustainable approach to handling organic waste streams - such as food waste and bio-sludge - without releasing plastic waste into the sea or gas emissions into the atmosphere.

While Evac HydroTreat® can process various waste mixtures, it's specifically optimized for wet waste treatment, including regulated garbage rich in food waste (from plate scraps and food prep) and bio-sludge (produced by the wastewater treatment system).

Using hydrothermal carbonization (HTC), this technology converts food waste and bio-sludge into biochar, a sterile and stable material that's easy to store onboard and offers multiple potential uses once onshore.

IMPACT ON CO2 EMISSIONS

Evac HydroTreat® consumes only a fraction of the energy required by conventional waste management systems using thermal dryers. The process is entirely emission-free, with no discharge to the sea or atmosphere.

Additionally, because HydroTreat® avoids incineration, it generates minimal CO2 emissions. For instance, a vessel carrying 5,000 people would produce just 250 tCO2 annually—an over 80% reduction in CO2 emissions compared to a vessel equipped with a thermal dryer and incineration system.

REFERENCES (if available)

Three Evac HydroTreat® systems with varying capacities have already been installed, with three more scheduled over the next 18 months.

The product's scale-up and expansion are actively underway (as of October 2024).

MORE INFORMATION

https://evac.com/products/evac-hydrotreat/

https://youtu.be/0x1Xm8VgtG8?si=zxcsuHoa64mK5qUo

The sole byproduct of Evac HydroTreat® - HTC-biochar

HALTON M.A.R.V.E.L.

ABOUT THE HALTON M.A.R.V.E.L.

M.A.R.V.E.L. is a state-of-the-art controls platform incorporating Demand Controlled Ventilation for Cruise ships' galleys as a key feature. The controls adjust real time galleys exhaust airflow rates, depending on the status of the cooking appliances. If only one cooking zone is operating, only the airflow required for that zone would be automatically adjusted. The other zones would continue to operate at a low flow rate. With M.A.R.V.E.L., a zone can be as small as a hood section. The supply air rates shall also be adjusted according to the signal which is given for the ship's HVAC automation by the M.A.R.V.E.L system.

This means impressive energy savings at all levels of the galley ventilation, along with a sensible and tangible improvement of chefs' and their teams' comfort.

M.A.R.V.E.L. can be installed on Cruise- and Ro-Pax newbuilds as an option for the Halton hoods and, can also be retrofitted to existing ships' galleys.

IMPACT ON CO2 EMISSIONS

When properly installed and integrated into the ship's HVAC automation, the energy savings and reduction of CO2 emissions brought by M.A.R.V.E.L. can be very significant. As an example, a 170,000 GT cruise ship with a passenger capacity of 4,500 passengers, the annual CO2 reduction can be up to 420 tons!

REFERENCES

Several shipowners trust Halton's M.A.R.V.E.L. system, and we have delivered M.A.R.V.E.L. hoods to numerous construction projects during the years.

We've also been helping to improve the energy efficiency of existing ships by supplying retrofit MARVEL systems to approx. 20 operating ships during last years.

MORE INFORMATION

Halton.com / Ships Segment Director, Tapani Peltola
tapani.peltola@halton.com

M.A.R.V.E.L. is based on the innovative and patented Halton's IRIS infrared sensors. The sensors "scan" the surface of the cooking blocks to monitor the cooking activity directly "at the source". On the right P&O Cruises MS Iona, which has Halton galley hoods with M.A.R.V.E.L.

MEYER ENERGY MANAGEMENT SYSTEM

MEYER EMS

ABOUT THE SOLUTION

MEYER EMS offers an intuitive dashboard that helps the crew to understand the ship's performance with minimum training.

The system provides actionable recommendations and insights, guiding the crew on how to increase the ship's operational efficiency. Accumulated real-time data from multiple on-board systems enables quick decision making.

The system has been developed by ALFRED Maritime's IIoT and data experts together with MEYER's energy efficiency team.

IMPACT ON CO2 EMISSIONS

Emissions are lowered when the ship's operational efficiency is optimized, e.g. resulting in reduced fuel consumption.

Areas of optimization:

- Operational efficiency of power plant
- Hotel loads
- Potable Water Generation
- Deadweight
- Condition monitoring

REFERENCES

MEYER EMS has been installed on several cruise ships to date and is continuously being optimized.

MORE INFORMATION

https://alfred-maritime.com/products/

NORSEPOWER ROTOR SAIL™

ABOUT THE NORSEPOWER ROTOR SAIL

The product uses a minimal amount of the ship's electric power to rotate the cylindrical sails on its deck. The spinning sail compresses air on the back side – and thins it on the front. The pressure difference causes a powerful thrust that can move even big ships.

This allows the main propulsion to be throttled back or raising the top speed. The sails can be installed on newbuilds or retrofitted to existing ships. The solution is particularly suited to tankers, LNG carriers, RoRos, RoPaxes, general cargo ships and bulk carriers, as well as cruise ships and ferries. It is easy to use, fully automated – and makes the crew happy.

IMPACT ON CO2 EMISSIONS

Typical emission reductions and fuel savings are 5 – 25 %, and even 70 % in good conditions. The exact amount depends on e.g., the ship, its route, time-at-sea and the number of units installed. Norsepower estimates the saving and reduction potential in its advanced, accurate simulations during the pre-study phase.

REFERENCES

- 16 Norsepower Rotor Sails™ have already been installed on eight ships
- 34 units more to come within next the 1.5 years
- Repeat orders and new deals are being signed at an ever-growing pace
- The next deliveries are happening even as you read this (status 2024-01)

MORE INFORMATION

https://www.norsepower.com/

Hybrid Ferries M/V Copenhagen & M/V Berlin, Scandlines.

POWER DISTRIBUTION SYSTEMS

Promeco

ABOUT THE SOLUTION

Promeco provides comprehensive power distribution systems, particularly for the marine industry.

Solutions include electrical switchboards that manage the vessel's electricity distribution network, propulsion, and other drives. These systems are designed to ensure efficient and reliable power distribution, with features that support preventive maintenance and hybrid solutions to enhance environmental friendliness.

In collaboration with ABB and RMC, Promeco has developed a pioneering electrical distribution solution for ships using ABB's Ekip LINK bus system. This solution enhance **the efficiency, safety, and sustainability of ship operations.**

IMPACT ON CO2 EMISSIONS

Promeco's power distribution system has the following environmental benefits:

- Reduces fuel consumption and verifies energy savings, contributing to lower CO2 emissions.
- The design helps save weight onboard, further improving fuel efficiency.
- Simplifies wiring and allows for programmatic changes, reducing the need for physical modifications.

REFERENCES

- Power distribution systems to number of vessels

Digital control solution system

- TT-Line, Rauma Marine Construction

MORE INFORMATION

www.promeco.fi

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STEERPROP CONTRA-ROTATING PROPELLERS (CRP)

ABOUT THE CRP AZIMUTH PROPULSOR

Steerprop contra-rotating propellers (CRP) is the most energy-efficient azimuth propulsor on the market. This high efficiency is based on the following features:

- Contra-rotating propellers maximize hydrodynamic efficiency by distributing power between two propellers and recovering rotational energy with the aft propeller
- Minimal mechanical losses due to an optimized lubrication solution
- Use of a Permanent Magnet (PM) electric motor, which offers excellent efficiency across the entire load range

IMPACT ON CO2 EMISSIONS

The efficiency gains of CRP can vary widely depending on the ship type, operational profile, and alternative technologies considered. Typically, CRP provides a 5-20% energy savings compared to other azimuth propulsion solutions.

Steerprop is fully equipped to engage in the ship concept design process, offering expert support to designers in determining the optimal propulsor parameters for each specific project.

REFERENCES (if available)

Steeprop has delivered over 150 CRP units since the year 2000.

MORE INFORMATION

https://steerprop.com/

Steerprop CRP azimuth propulsion with integrated PM electric motor.

WÄRTSILÄ 25 AMMONIA SOLUTION

ABOUT THE WÄRTSILÄ 25 AMMONIA SOLUTION

There is a strong pressure to decarbonize the marine industry, and ammonia is one of the most promising fuels to achieve this. But it comes with a set of technical challenges. The Wärtsilä 25 integrated ammonia solution brings a full solution for enabling a vessel to operate on ammonia as fuel. With this solution, Wärtsilä is recognized to be the first 4-stroke ammonia engine maker, and the only one in the market who is able to provide the entire chain of ammonia related technologies, from bunkering to energy conversion and exhaust handling.

After several years of technology testing in Demo2000 and under product development of Wärtsilä 25, world's first 4-stroke ammonia solution was introduced in November 2023 with extremely high interest from the market. Together with the first 4-stroke ammonia engine, Wärtsilä released the whole ammonia solution including AmmoniaPac and Ammonia release mitigating system (WARMS), exhaust aftertreatment system for ammonia operation, and integrated control for the total ammonia solution on board.

Today's integrated ammonia solution produces 70% GHG reduction from well to wake, with existing plans to increase decarbonization ratio in the near future for both new build, and also for already delivered solutions with minimum upgrade.

IMPACT ON CO2 EMISSIONS

The Integrated Ammonia solution is having three main steps which are to be demonstrated with the pilot customer between 2025 and 2030:

- reach minimum 70% GHG reductions (This is now available and guaranteed)
- reach minimum 85% GHG reductions (This is demonstrated in the lab, ready for upgrade)
- reach minimum 95% GHG reductions (This is under development in the lab, target to provide as upgrade package to improve customer value)

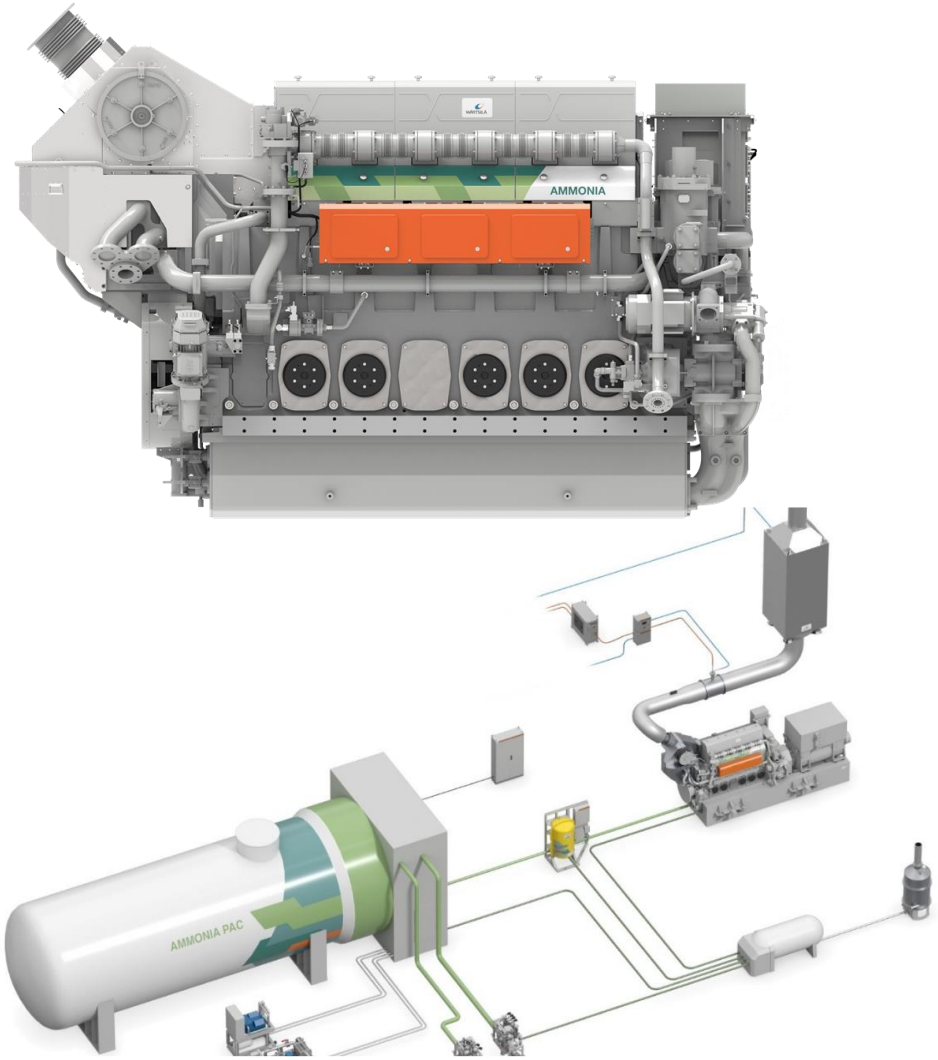
Total efficiency of the integrated ammonia solution is very high due to a battery integrated solution which is part of Wärtsilä's scope of supply. Also, W25DF Ammonia engine is having the highest efficiency in the market, regardless of fuel.

REFERENCES (if available)

First engines sales was officially announced August 26th, 2024 going to Eidesvik's offshore platform supply vessel "Viking Energy"

MORE INFORMATION

https://www.wartsila.com/marine/products/gas-solutions/ammonia-supply-systems/ammoniapac



The W25 Ammonia engine and the integrated ammonia system

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2.2 DESIGN

BATTERY-POWERED HYBRID VESSELS

ABOUT THE SOLUTION

In short: scheduled routes batteries may fully provide propulsion power. In other cases, batteries will increase propulsion efficiency and provide peak power shaving.

Comatec offers consultation, concept design and basic design and simulation for electrical systems in battery-powered vessels.

IMPACT ON CO2 EMISSIONS

With fully battery-powered or with hybrid propulsion the propulsion system CO2 emissions will be significantly lower compared to a pure diesel power plant.

REFERENCES

Ferry L-198, 2024

MORE INFORMATION

https://www.comatec.fi/en/reference/lossi-l-198s-upgrade-into-abattery-powered-hybrid-ferry/

Finferries road ferry L-198, 2024.

FUTURE-PROOF SHIP DESIGN PLATFORM

ABOUT THE SOLUTION

Deltamarin's digital design platform consists of several layers that support in a modular way the creation of the ship technical documentation and selection of systems for both newbuildings and retrofit projects. The core "layers" are:

DeltaWay – ship hull, volume and structural model level, which is the central building block for any ship project

DeltaSeas – ship operational and propulsion power layer involving also ship external forces

DeltaKey – ship system level energy model, which is also an input to rule compliance regarding carbon intensity or costs related to ETS or FuelEU

One of the latest dimensions of digital design is the Life Cycle Assessment (LCA) which can be performed based on measured data or the digital models of operation

IMPACT ON CO2 EMISSIONS

The digital design methods allow designing even carbon negative vessels on a well-to-wake perspective and to determine numerically the achieved results.

The essential impact of the design methods is that they allow screening a large number of solutions related to ship operation, ship equipment, design choices and fuels in a rapid manner during the early stages of design.

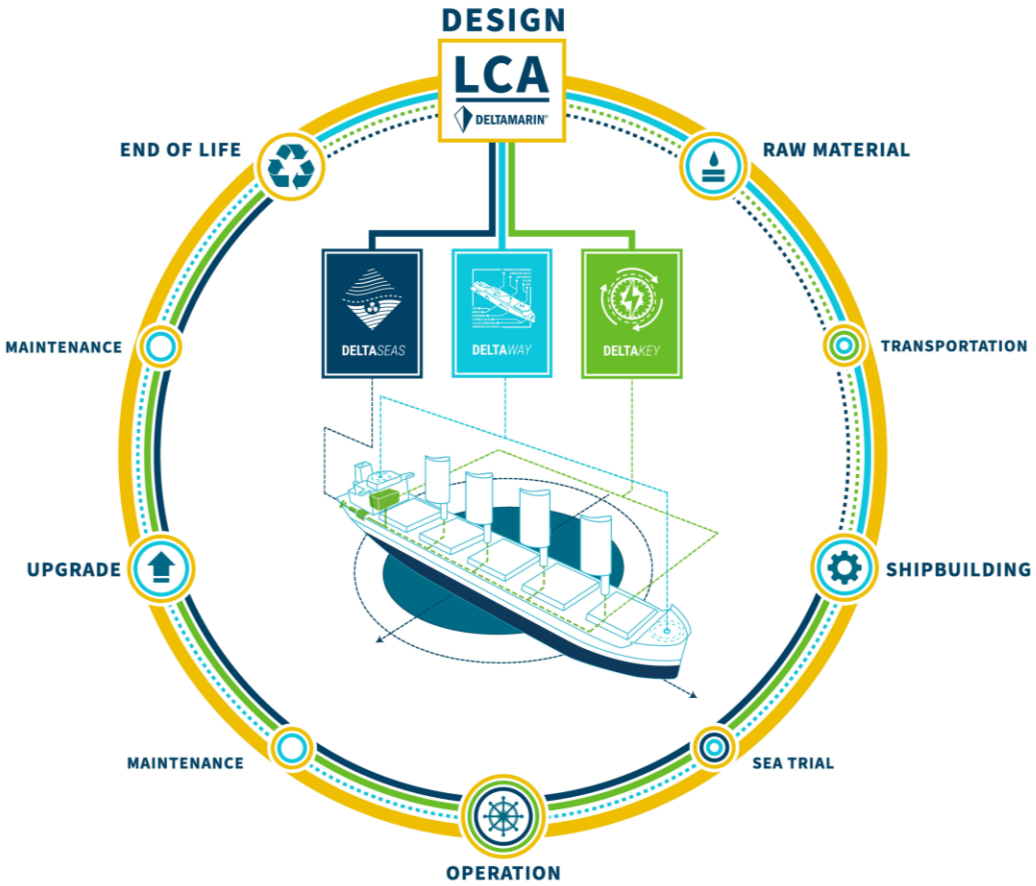
REFERENCES

For example, at present (year 2024) more than 90% of the ships under construction with Deltamarin's design have selected other fuel than the conventional HFO/MGO and over 50% of the projects involve specific energy saving technologies, such as sails or air lubrication.

Deltamarin prepares approximately 30-60 conceptual designs each year and currently there are over 80 vessels under construction based on our design.

MORE INFORMATION

https://deltamarin.com/



Visualisation of some of the central building blocks of future-proof ship design methods and how they couple to the vessel along its operational life.

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ELOGRID™ - ENHANCING SHIP PERFORMANCE FOR A SUSTAINABLE FUTURE

ELOMATIC
Visions of Tomorrow, Engineered Today

ABOUT THE SOLUTION

Elogrid™ is a Tailor Made Thruster Grid Solution tailored to meet the specific requirements of each vessel, utilizing Computational Fluid Dynamics (CFD) analysis to customize the solution according to the vessel's hull shape and operational characteristics, and improve hydrodynamic performance.

Elogrid is a cutting-edge solution crafted by our team, dedicated to maximizing energy efficiency and minimizing environmental impact in maritime operations. Some of Elogrid's key features and benefits are:

- Enhanced maneuverability
- Side thrust improvement
- Fuel efficiency
- Higher comfort

IMPACT ON CO2 EMISSIONS

One of the most significant advantages of Elogrid is its ability to reduce ship resistant.

With potential **fuel savings ranging from 1% to 4%**, depending on vessel design and operational factors, Elogrid delivers immediate benefits by lowering carbon dioxide emissions and improving the Carbon Intensity Indicator (CII) rating. With Elogrid embrace a future of smoother, quieter, and environmentally friendly journeys.

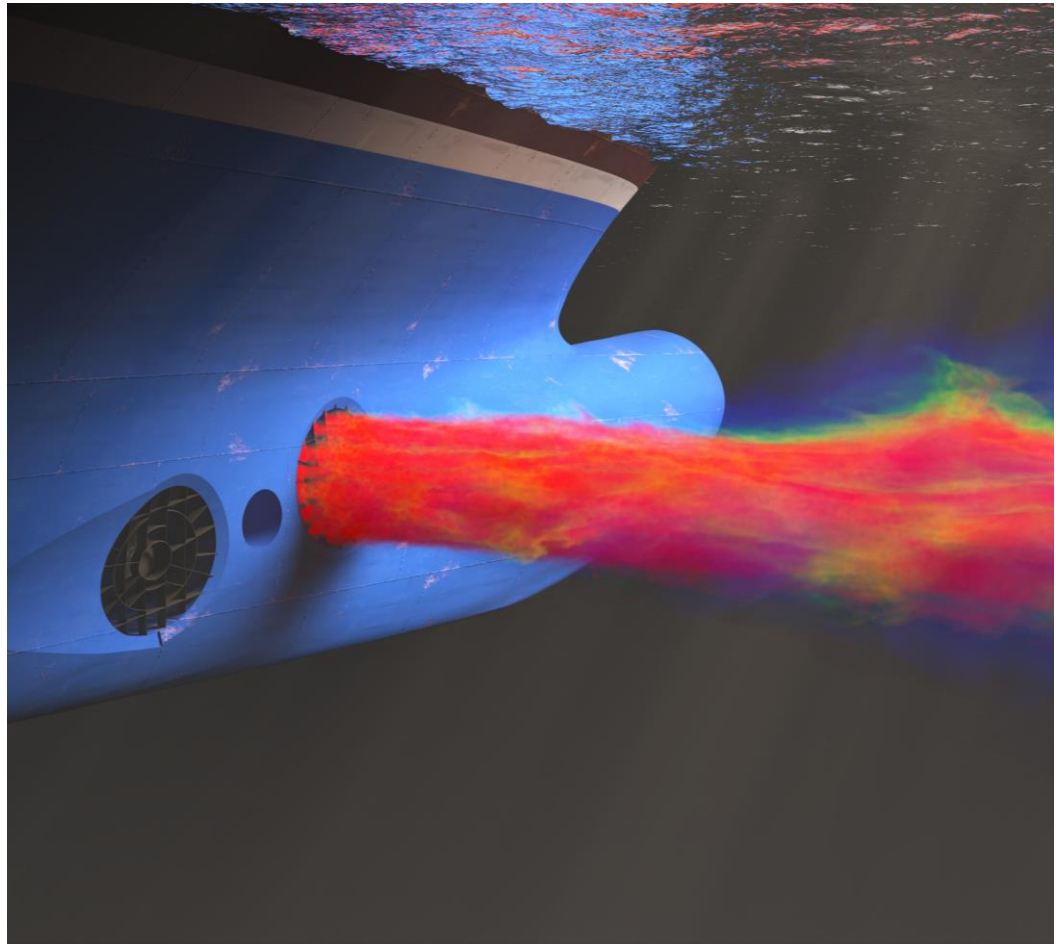
REFERENCES

U.S. Patented Elogrid has demonstrated outstanding performance on vessels like the Viking Line M/S Cinderella and the MS Crown Seaways cruise ferry operated by DFDS A/S.

Check out more references from our website!

MORE INFORMATION

Elogrid - Elomatic



Non circulating water flow coming through Elogrid.

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MECONET GROUP SHEET METAL SOLUTIONS

meconet

ABOUT OUR SERVICES

With decades of experience partnering with industry leaders in electrical, maritime, and e-mobility sectors, we specialize in enabling successful market entry by co-creating sustainable products tailored for challenging maritime environments.

Our services include:

- Manufacturing of sheet metal components and assemblies for batteries and fuel cells.
- Providing development support in optimizing the product design.

Our commitment is to create innovative sheet metal solutions for reaching IMO's zero emission target of maritime carbon reduction.

IMPACT ON CO2 EMISSIONS

Design phase is critical in determination of the environmental impact of a product. In this phase the type of the raw material and the material consumption are defined.

By optimizing sheet metal product design robust and light components can be created. The weight of the component is a major element in regard to sustainability as 1 KG of raw material manufacturing causes 3 KG of CO2 emissions.

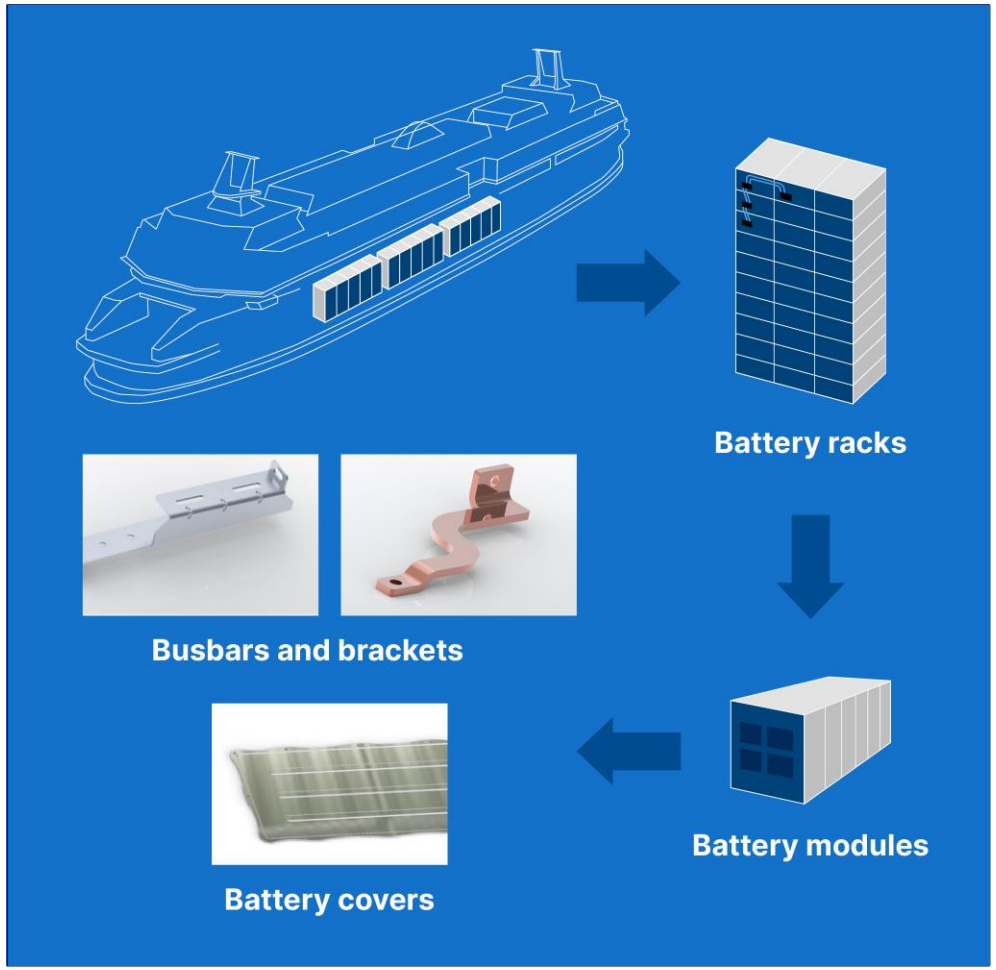
In addition to helping optimize customer´s products, we develop continuously our in-house operations and supply chain towards ambitious sustainability targets.

REFERENCES

We are currently operating together with several key players of sustainable maritime technology. We design and manufacture sheet metal components for their battery and fuel cell solutions.

MORE INFORMATION

https://www.meconet.net/en/home/



Examples of Meconet's sheet metal solutions.

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2.3 PORT SOLUTIONS

ELECTRIC SHORE SUPPLY SYSTEM

ABOUT THE SOLUTION

With the shore-side electricity system, ships receive all the electricity they need in port without having to use diesel-powered auxiliary engines. The systems are usually tailored for each vessel type.

Comatec offers consultation, pre-design and site supervision for electric shore supply systems both for the equipment to be installed on shore and onboard the vessel.

Onshore power supply systems will become mandatory for passenger and container vessels above 5,000 GT in EU ports as of 1 January 2030.

IMPACT ON CO2 EMISSIONS

Shore-side electricity systems built for ports and ships can reduce greenhouse gas emissions during a ship's stay in port by up to 80 per cent.

REFERENCES

Port of Helsinki (Vuosaari), 2024.

MORE INFORMATION

https://www.comatec.fi/en/port-of-helsinki-and-comatec-creating-a-carbon-neutral-port/

Port of Helsinki (Vuosaari), 2024.

VIRTUAL PORT ARRIVAL

SIILI®

ABOUT THE SOLUTION

Currently, vessels rush to the port with the prevailing First Come, First Served principle even if there is a known delay. Emissions could be reduced by increasing operational efficiency. By using Virtual Port Arrival (VPA), a vessel can slow down to only arrive at the port when the berth becomes free – without jeopardizing its place in line, using excess fuel, or violating contracts. As a result, the ship "virtually arrives" as scheduled, just as if it had continued at the original speed.

The VPA platform is a win-win solution – it brings fuel and emission savings among parties and fosters transparency and decision making for all.

IMPACT ON CO2 EMISSIONS

The emissions savings from VPA are substantial, with average fuel savings of 20% and CO2 savings exceeding 24%. The global impact could be significant – in Finland alone, more than 135 000 metric tons of CO2 emissions and 44 million euros could be saved every year by using Virtual Port Arrival (based on estimates calculated on port calls and VPA results).

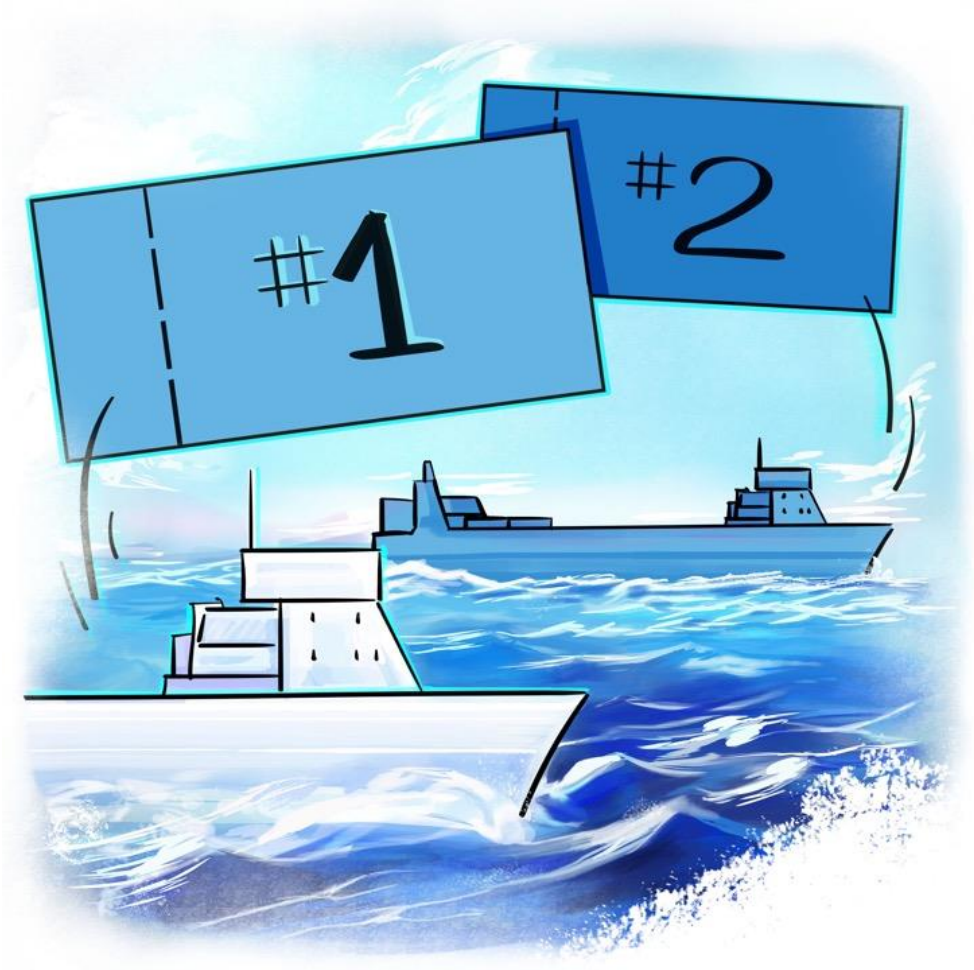
REFERENCES

The CO2 savings are based on a trial run by ESL Shipping, Port of Oxelösund, Yara, and SSAB.

MORE INFORMATION

https://www.siili.com/maritime

VPA contributes also to the European Gaia-X data space initiative and is planned to be integrated with the NEMO European Single Maritime Window.



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MAGMOOR AUTOMOORING

ABOUT MAGMOOR

3MAR Magmoor is an automooring device for marine vessels. Onboard installed Magmoor connects the vessel magnetically to a counterplate on the shoreside and pulls the vessel against the shore side supports maintaining the vessel's position at berth.

Magmoor is independent push button system on the bridge allowing crew to allocate their attention elsewhere such as unloading and loading duties. No additional skills or complex training is required for the users –user interface is designed to be easy to use.

3MAR Magmoor is factory tested modular system that is easy to transport and install either onboard or onshore.

Modularity and simplicity in its design are features ensuring the reliable operation.

IMPACT ON CO2 EMISSIONS

Ferries are kept to their position at berth using propulsion to push them against the ramp while loading and unloading. This consumes energy taken. The amount of the consumed energy is subject to environmental conditions, route and human factor among others but is often significant. Automooring allows to stop the propellers during the stays at ports saving energy.

REFERENCES

Weisse Flotte GmbH M/F Warnow & M/F Breitling, Germany. Two devices with the capacity of 20 t each, delivered 04/2023

MORE INFORMATION

https://www.3mar.fi/

Magmoor on M/F Warnow and the counter plate at Hohe Düne, Germany.

NECTOR™ CHARGING CONNECTOR

ABOUT NECTOR™

3MAR NECTORS™ are two series of charging connectors for AC and DC systems. They are designed by shipbuilders understanding the naval architectural limitations and the importance of robustness both onboard and at the quayside.

Nector™ is installed on the shore side ramp and the connection is parallel to the vessel. Along with the ramp, Nector follows the ship's movements when the water level or draft changes. Nector searches for the ship's connector with machine vision and connects in up to 8 seconds.

Nectors™ are independent push button systems on the bridge allowing crew to allocate their attention elsewhere such as vessel mooring, unloading and loading duties. No additional skills or complex training is required for the users –user interface is designed to be easy to use.

3MAR Nector™ family includes three different sized models with different reaches and capacities. All the models are available for either AC or DC systems.

IMPACT ON CO2 EMISSIONS

Changing the vessel's energy source from fossil-based energy to the electricity reduces the local emissions to zero. By procuring environmentally friendly electricity, it is possible to reduce total carbon dioxide emissions to zero.

REFERENCES

Färjerederiet, Sweden: Two Nector 2000 Charging connection devices for double-ended road ferries, 2024

Posiva, Finland: Nector 1000 Charging connection device for material handling vehicle, 2022

Färjerederiet, Sweden: Nector 2000 Charging connection test device, 2020

Ærøfærgerne, Denmark: Nector 4000 Charging connection device for electric ferry, 2019

MORE INFORMATION

https://www.3mar.fi/

Nector 2000 Charging connection device in Vaxholm, Sweden.

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2.4 SHIP INTERIOR

HT-300 B-15 LOW-CARBON CEILING

Lautex®

ABOUT THE SOLUTION

Lautex HT-300 B-15 panels are widely used in cabins and corridors on cruise ships and ferries. It is one of the best-selling products from Lautex. Lautex now offers a new low-carbon solution for customers, where standard steel in the ceiling panels is replaced with zero carbon emission steel from our partner.

All the characteristics of the ceiling are the same as in the standard HT-300 B-15. The only difference is the reduced carbon emissions.

The ceiling can be installed in new buildings as well as in retrofit projects on existing vessels.

Lautex remains committed to developing solutions that meet both functional and environmental needs.

IMPACT ON CO2 EMISSIONS

The main source of CO_2 emissions comes from the raw materials used, specifically steel and insulation, with steel having a higher impact. By using zero carbon emission steel, Lautex significantly reduces the environmental footprint of its products.

According to calculations, this reduction in ceiling panels, can be as high as 55%. This innovative approach not only lowers emissions but also supports sustainable practices in the maritime industry.

REFERENCES (if available)

No references are available yet. However, many shipyards are actively planning for low-carbon vessels, and this initiative marks a significant step toward that goal.

MORE INFORMATION

Sales@lautex.fi

Lautex standard HT-300 B-15 ceiling on the vessel Icon of the Seas.

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CARBON FOOTPRINT CALCULATION

ABOUT THE SOLUTION

NIT's Carbon Footprint Calculator is the first of its kind being able to consider in detail the environmental impact of ship interiors, both carbon footprint and the positive impact, carbon handprint.

Calculation considers the complete design of the area, including all the materials from background to finished surfaces and the building method. Alternative materials can be researched and compared.

Carbon Footprint Calculation is developed with VTT (Technical Research Centre of Finland) and is based on EN 15804 standard, considering product life cycle in stages A1-A5.

Results of the calculation are expressed as the total amount of greenhouse gases, kg CO2e.

IMPACT ON CO2 EMISSIONS

NIT helps its customers to lower the environmental impact of their projects with calculation data and extensive report, including selection of alternative materials with lower carbon footprint. In addition, NIT is able to consider the effect on design and installation.

The calculation offers validated and useful data for both shipyards and ship owners about the carbon footprint and reduction potential of interior areas.

REFERENCES

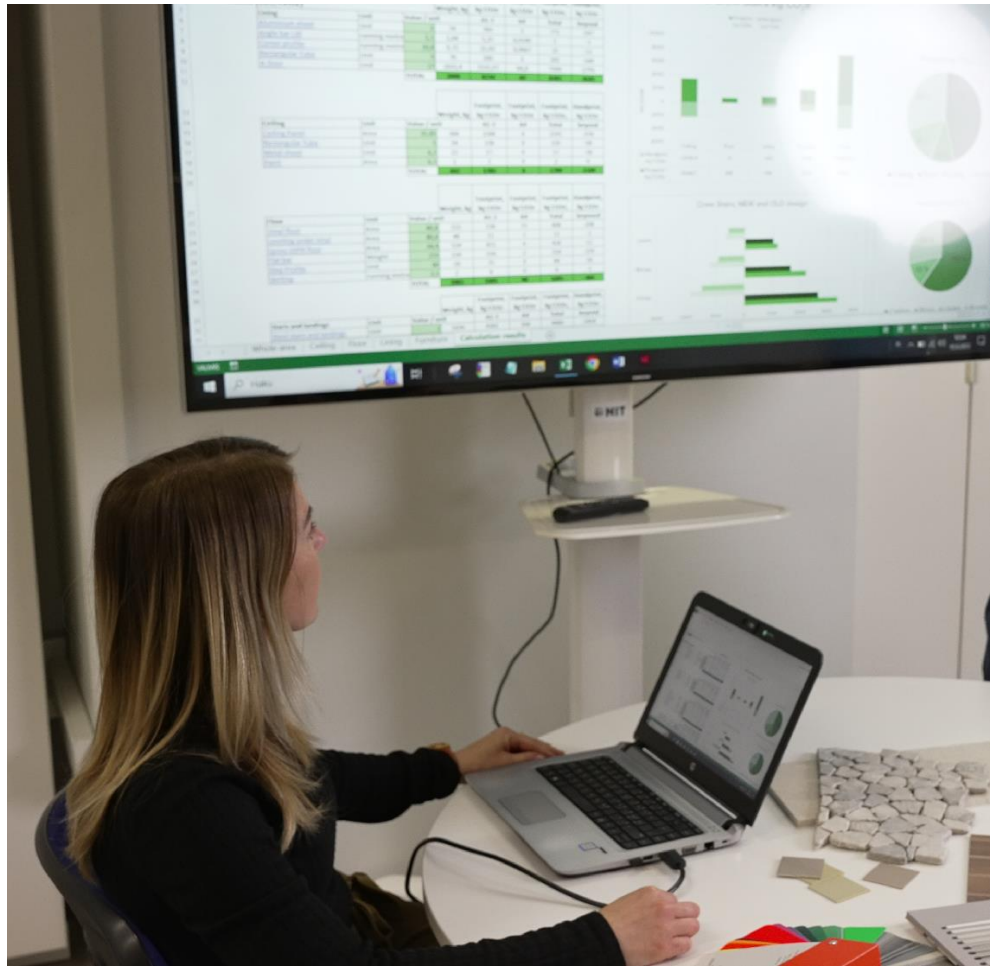
Public Restaurant area in new build cruise vessel: comprehensive report about carbon footprint, handprint and materials used.

Also, baseline information about the environmental impacts of various types of interiors and selection of alternative materials.

MORE INFORMATION

https://www.nit.fi/carbon-footprint-calculation/

Juhani Määttänen, Director Design & Engineering
juhani.maattanen@nit.fi



Carbon Footprint Calculation, NIT Naval Interior Team.

PROTECTIVE INSULATIONS TO MARINE APPLICATIONS

Promeco

ABOUT THE SOLUTION

Promeco's insulation panels are especially designed to insulate extreme heat and to reduce surface temperatures. Temperatures around the engine are usually dangerously hot and flammable.

Promeco is highly experienced in designing and delivering SOLAS (Safety Of Life At Sea) compliant insulation solutions based on individual ships needs. Safety and efficiency is at the forefront of comprehensive solution that will ensure compliance with classification societies and authorities as well as increase performance and serviceability of the engine contributing to sustainable maritime industry.

IMPACT ON CO2 EMISSIONS

Promeco insulation solution helps to reduce CO2 emissions

- **Improved energy efficiency-** by minimizing heat loss the energy provided by the engine is used effectively.
- **Enhanced engine performance-** by maintaining stable temperature leads to lower fuel consumption.
- **Extended equipment lifespan-** reduces the need for replacements and less manufacturing related emissions over time.

REFERENCES

Promeco has decades of experience in delivered insulation solutions globally

- passenger vessels
- exhaust system of engines
- turbo chargers

MORE INFORMATION

www.promeco.fi

BUSINESS FINLAND

SEA CLIMAVER®

ABOUT THE SEA CLIMAVER®

Made from dense and rigid glass wool boards, SEA CLIMAVER® self-supporting air ducts are a cost-effective, easy-to-install alternative to traditional insulated metal ducts.

Manufactured from up to 75% recycled glass wool, it reduces the need for sand extracted from quarries and helps protect biodiversity. Compared to metal ducts requiring the use of screws and welding, SEA CLIMAVER® also reduces the consumption of additional tools and equipment.

An all-in-one metal-free system, delivered flat on a pallet, and assembled in a single operation. Duct sections are assembled easily, without the need for expensive machinery usually used on-site. A shiplap on the edges ensures tight closure of the duct.

BUSINESS
FINLAND

IMPACT ON CO2 EMISSIONS

Compared to a traditional ductwork solution (metal duct + insulation), SEA CLIMAVER® reduces the weight of your HVAC ductwork by up to 65%. This translates directly into reduced fuel consumption, which in turn decreases green house gas emissions (each ton of fuel used is equivalent to 3 tons of CO2).

REFERENCES (if available)

Pilot project in the Icon Of The Seas built in Meyer Turku Finland

MORE INFORMATION

https://www.isover-technical-insulation.com/news/sea-climaverr-sustainable-duct-systems-marine-offshore

SEA CLIMAVER light-weight duct system

SEA COMFORT FLOOR SLAB

ABOUT THE SEA COMFORT FLOOR SLAB

ISOVER Sea Comfort Floor Slab is primarily used for sound insulation in floating floor solutions. It can also be used for thermal insulation. The product is over 40% lighter in weight compared to traditional solutions.

Excellent compressive strength and dynamic stiffness deliver outstanding sound insulation properties. The light-weight glass wool slab also provides exceptional thermal insulation.

A rigid glass wool board. No facing. Insulation material is non-organic and chemically neutral and does not contain corrosive agents.

IMPACT ON CO2 EMISSIONS

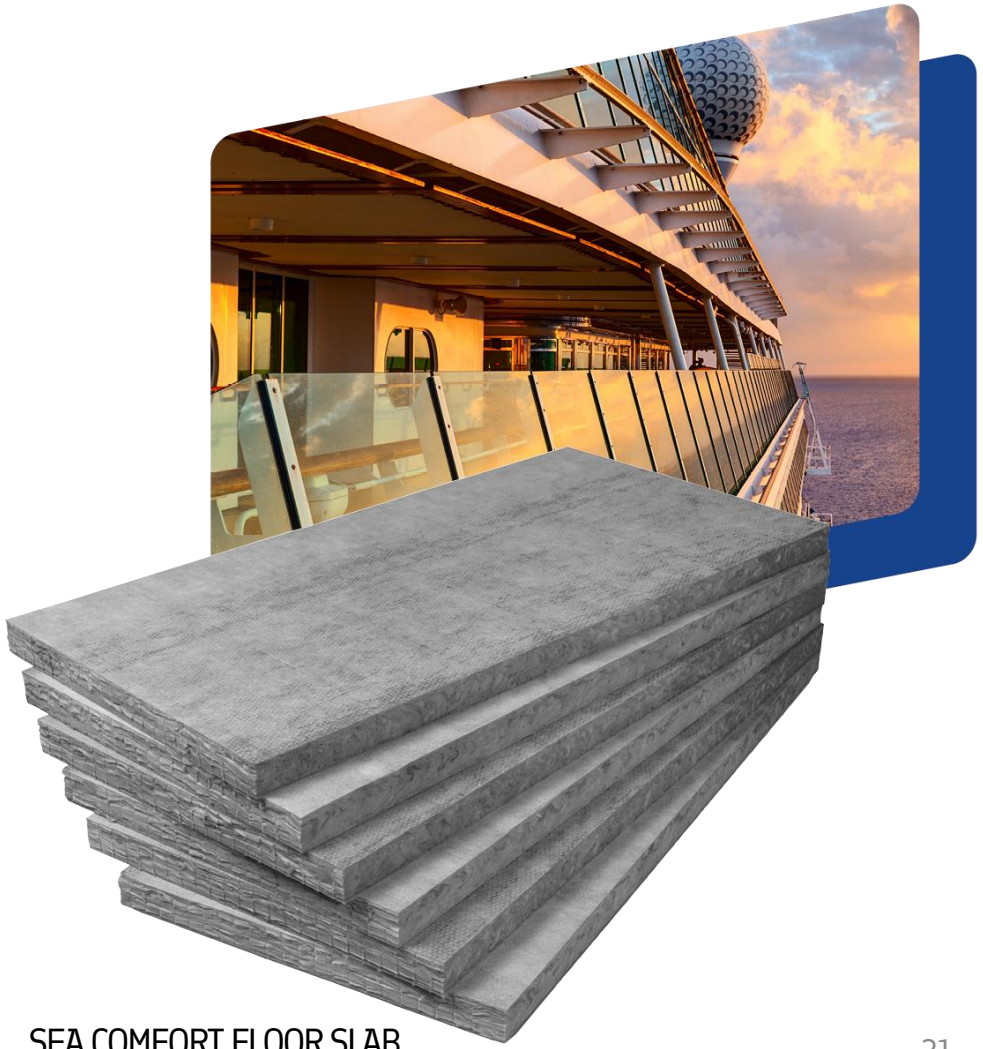
Made from 80 % recycled glass. Over 40 % lighter in weight compared to traditional solutions. This translates directly into reduced fuel consumption, which in turn decreases green house gas emissions (each ton of fuel used is equivalent to 3 tons of CO2).

REFERENCES (if available)

Pilot project in the Mein Schiff 7 built in Meyer Turku Finland

MORE INFORMATION

https://tekniset.isover.fi/Tuotteet/tekniset-eristeet/isover-seacomfort-floor-slab



SEA COMFORT FLOOR SLAB