



**Strong at innovation on sustainability**

**SUSTAINABLE  
MARITIME  
SOLUTIONS**  
Powered by the Dutch



**NETHERLANDS  
MARITIME  
TECHNOLOGY**

**[www.sustainable-maritime-solutions.nl](http://www.sustainable-maritime-solutions.nl)**

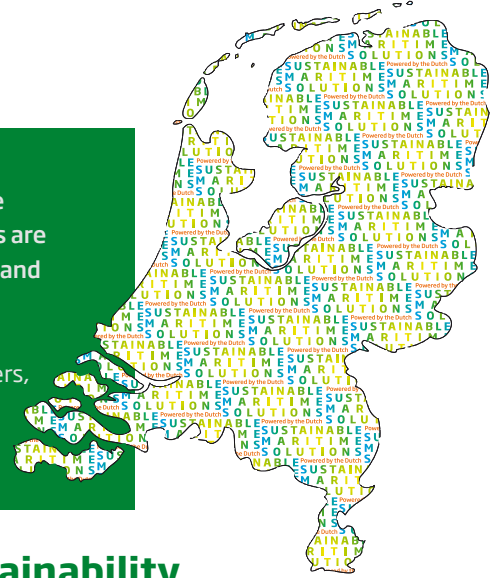


## Sustainable maritime solutions

The Dutch maritime technology sector is innovative and has hundreds of ideas to ensure sustainability in shipping. Emission reduction, fuel efficiency, ship recycling and robotics are of importance to make a greener world. Corporate Social Responsibility is a serious case and together the sector is able to tackle several social challenges.

Netherlands Maritime Technology, the Dutch association of shipbuilders and maritime suppliers, is continuously collecting and presenting all sustainable products and services on

[www.sustainable-maritime-solutions.nl](http://www.sustainable-maritime-solutions.nl)



## Learn more about the maritime contribution to sustainability

### Product

You can find more of the sustainable products on [www.sustainable-maritime-solutions.nl/product](http://www.sustainable-maritime-solutions.nl/product)

#### HOEKMAN SHIPBUILDING AND PADMOS:

#### A REVOLUTIONARY, INNOVATIVE AND SUSTAINABLE TRAWLER



Hoekman Shipbuilding and Padmos have designed and build a revolutionary, innovative and sustainable trawler. The special hull design is like the shape of a whale: a sharp bow in the front, a big belly for the fish hold in the middle and a strong tail/propellor at the stern. These lines gives her less resistance, more propulsion power to tow the nets and good stability and sailing speed.

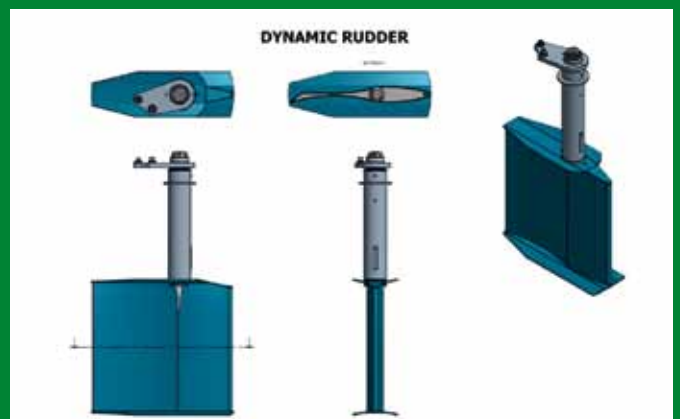
The vessel is powered by a diesel-electric propulsion plant which comprise a 625 kVA generatorset and a e-motor of 400 kW, direct coupled to the shaft and a 3-blade propellor inside a 3.000 mm nozzle. The vessel can handle the harsh conditions of the North Sea and uses the twinrig method to catch the fish.

#### DE WAAL:

#### AN ENERGY EFFICIENT RUDDER FOR INLAND NAVIGATION

The old rudder types that have been used a lot for inland vessels have been subjected to an investigation into energy saving. After a test on an inland tanker with a new type of rudder designed by the R&D department, drag tests were performed at Marin and a location study was conducted at TU Delft. Following positive results from all investigations, the Easyflow rudders have now been introduced to the maritime world.

Up to January 2016, 37 vessels have been converted and 17 new vessels have been fitted with Easyflow rudders. They all show positive results and consume less gas oil. The very large rudders in particular, that for a large part are in the propeller radius, are able to achieve fuel savings from 15 to 18%.



## LANKHORST ROPES:

### 'THROUGH LIFE, FOR LIFE', A RECYCLING SCHEME FOR ROPES

Lankhorst Ropes is committed to sustainability in its products and operations, conserving energy and natural resources wherever possible. Lankhorst's 'Through Life, For Life' service promotes sustainable rope management by enhancing rope performance and a lifelong service while using retired ropes for research and producing other products.

Lankhorst Ropes introduced the maritime rope industry's first recycling scheme, preventing retired synthetic ropes being wasted and polluting the environment and assisting many of our partners in enhancing their environmental policies. Lankhorst Ropes also supports other sustainability projects including the Ocean Cleanup Project which is developing a system to remove waste plastics from the oceans.



## GOODFUELS:

### A COLLABORATION TO BRING SUSTAINABLE BIOFUELS TO THE MARINE MARKET



GoodFuels, Boskalis and Wartsila collaborate to bring sustainable biofuels to the marine market. Whereas these biofuels have been lacking within this market they have proven to be of great potential in reducing the carbon footprint of the industry without fleet renewal. Biofuels reduce local emissions significantly, and life-cycle CO2 emissions by 80+ percent.

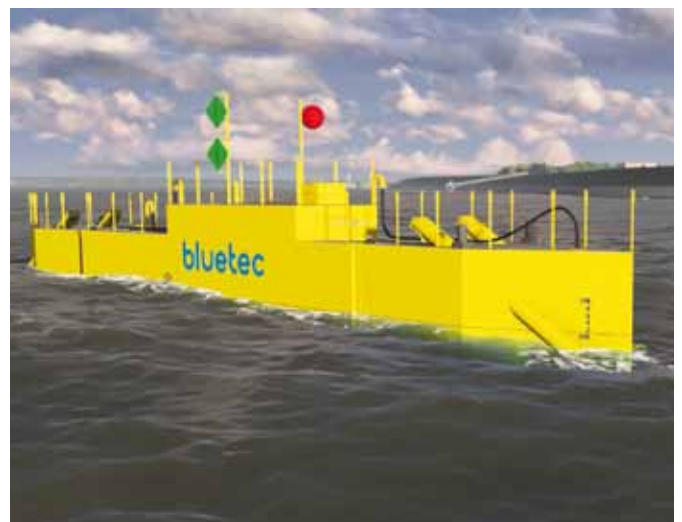
Together this partnership develops, tests and commercialises several qualities of biofuels, tailor-made for the marine industry. The biofuels are all made from waste-streams and have to be approved by GoodFuels' Sustainability Board, headed by leading academia and NGO's.

## DAMEN SHIPYARDS GROUP:

### BLUETEC TIDAL TURBINE PLATFORM

Damen, along with a group of other leading partners active in the offshore industries, has realised the development of BlueTEC, a floating tidal energy platform. The first example is currently in operation off the Dutch coast close to the island of Texel. BlueTEC, an innovative design based on a Damen modular platform, generates clean electricity from the tides and feeds it into the power grid. Such a method offers a predicable supply of energy, based on tidal consistency. The platform currently carries a 100kW turbine, but is a stepping stone to further development, which will see larger platforms in the future.

BlueTEC offers the means to generate clean electricity from the tides. Its modular nature ensures that it is not only extremely cost-effective but also that it can be transported easily anywhere in the world.



## EL-TEC:

### CONVERTING OF A SEVEN YEAR OLD DRY CARGO SHIP TO A PARALLEL HYBRID SHIP TO BRING SUSTAINABLE BIOFUELS TO THE MARINE MARKET

A seven year old dry cargo ship has been converted by eL-Tec to a parallel hybrid ship. The ship named MS Borelli is the second ship equipped with the very compact eL-Tec Power System parallel hybrid solution with a permanent magnet propulsion motor (360kW), permanent magnet generators (1x350kW & 1x280kW), b3ow thruster (440kW) and PowerMaster inverters.

The goal of the renovation of the MS Borelli is fundamentally bringing CO2 emissions down and saving fuel. In addition, the parties concerned with this green ship want to make a statement to show the industry that it is possible to making an existing ship more green.



## Process

Do you want to learn more about the different sustainable processes within the sector?  
Visit [www.sustainable-maritime-solutions.nl/process](http://www.sustainable-maritime-solutions.nl/process)

## SHIPBUILDER:

### THE IMPLEMENTATION OF A KNOWLEDGE BASE FOR SUSTAINABILITY REQUIREMENTS



Shipbuilder makes sustainable design, construction, maintenance and ultimate scrapping of a ship easy and within reach. Shipbuilder has taken the next step in the field of maritime sustainability with the implementation of a Knowledge Base for Sustainability Requirements in their software. In the Knowledge Base, Shipbuilder users can easily enter or import the sustainability requirements for the design, construction or refit of a ship. The software checks whether the ship continues to comply with the sustainability requirements - from a proposal to a design, and from a design to the construction.

## UNIBALLAST:

### IN-PORT BALLAST WATER MANAGEMENT

UniBallast has developed a concept for In-Port Ballast Water Management using mobile ballast water reception and treatment points in ports all over the world. Barges, moving around in port and even outside the port on open sea, collect ballast water from vessels for treatment. When full, barges pump the water into a closed port basin or tanks of a bulk carrier outfitted with a treatment system.

It allows vessels to quickly discharge their ballast water and continue their journey. The ship owner's responsibility ends immediately after discharge and vessels are no longer required to



wait for actual treatment and IMO/USCG required holding times for discharge. In-Port Ballast Water Management helps prevent the transfer of invasive aquatic species.

# Company

The other company solutions are collected on [www.sustainable-maritime-solutions.nl/company](http://www.sustainable-maritime-solutions.nl/company)

**TKF:**

## **CORPORATE SOCIAL RESPONSIBILITY CERTIFICATION**

Corporate social responsibility is increasingly becoming the subject of discussion in the commercial sector. Whereas efficiency and cost savings were initially the reasons for sustainable entrepreneurship, the focus is now on attitude and behaviour. TKF has been well aware of its social responsibility for sustainability for years. Corporate Social Responsibility (CSR) is therefore one of TKF's strategic and future-oriented key areas.

Based on the certification, TKF demonstrates its policy and ambitions in this area. This also includes various areas of interest, such as the social aspect of entrepreneurship and constant attention to the environment and climate. At this moment TKF is the first and only cable manufacturer certified for all management systems combined.



**BAKKER SLIEDRECHT:**

## **BUSINESS SCHOOL TO EDUCATE YOUNG TALENT**



Bakker Sliedrecht has started its own business school in 2009, in collaboration with a vocational school. Young talents are offered a multi-year educational program to prepare them for a career in electrical engineering. The program combines both theory and practice. All students receive personal coaching throughout the program to assist them with making vital career choices. After completing the program, students receive a diploma that is recognized nationwide. Trade organization UNETO-VNI awarded Bakker Sliedrecht with the predicate Excellent training company.

With the educational program, Bakker Sliedrecht ensures that young talent is offered a jumpstart into their career. At an early age, students are offered the "tools" for a successful career. This enables them to seize job opportunities and help them shape their own lives.

## **A green sector, a green world**

Together with cluster partners and knowledge centra within the sector, new technology is being developed and market rapidly. In particular the increase in the durability of vessels is the incentive for these innovation processes. Especially huge fuel reduction is an unique Dutch knowledge area. The backbone for this are the specific research institutes, which are known worldwide.

By focusing on sustainability the sector can contribute to the solutions of several social challenges, such as: the reduction of the load on the environment, the transition to renewable energy from wind and flow, the reduction of congestion in transport chains and the maintenance of the employment in the Netherlands.

# Dutch sustainable companies



## The project continues

The information collected on [www.sustainable-maritime-solutions.nl](http://www.sustainable-maritime-solutions.nl) remains an important source on products, processes and companies related to the sustainable solutions.

Submitting your sustainable solutions is easy and only takes a few minutes. Go to [www.sustainable-maritime-solutions.nl](http://www.sustainable-maritime-solutions.nl) and fill in the form under 'Join'. Register your company, select the category, give a brief description of the solution and add some attachments (eg datasheets, photos or video).

### CONTACT

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