

ENGINEERING
TOMORROW

Danfoss

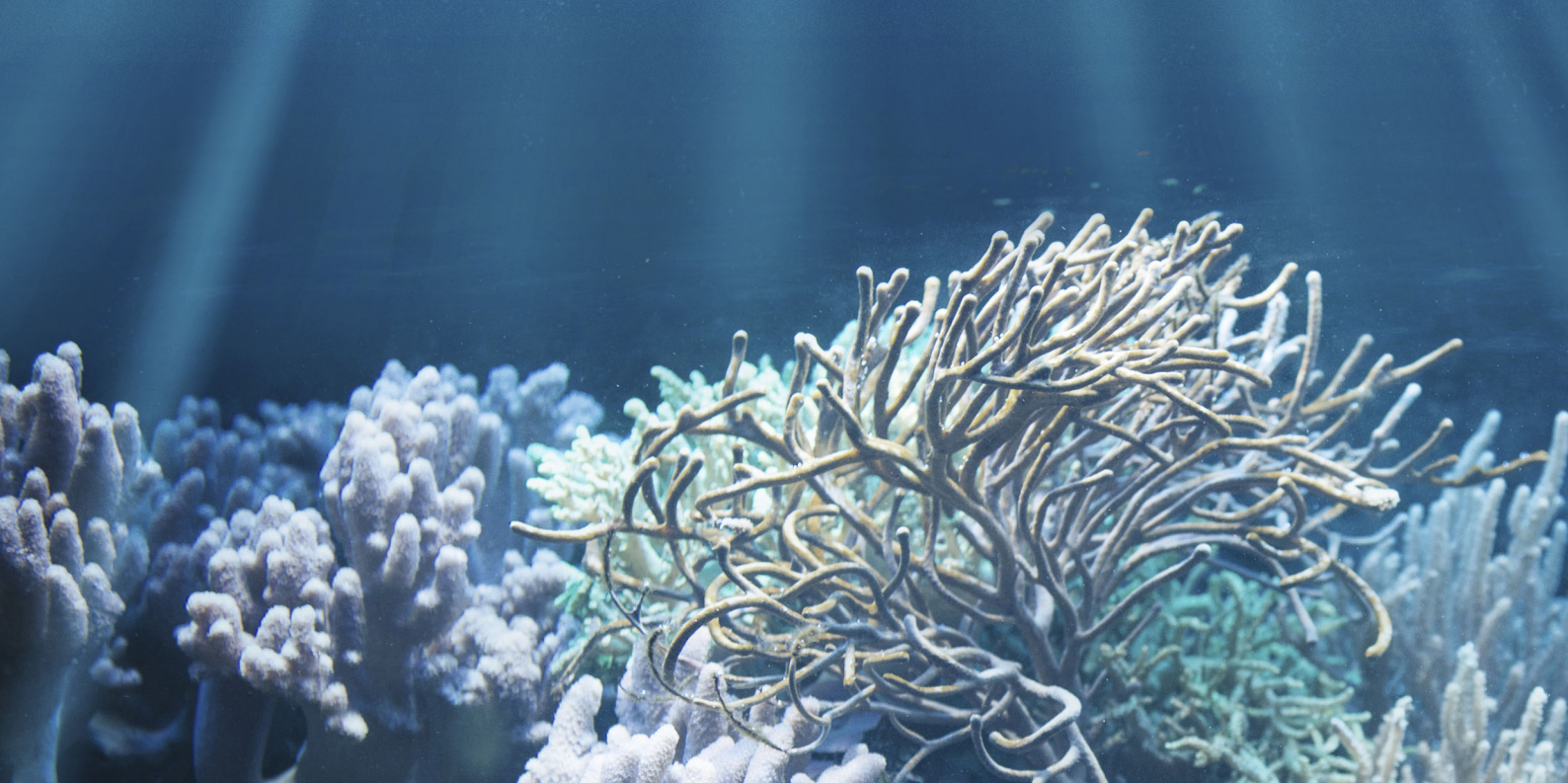
Case study | SONDEX® Heat exchangers

New **in-voyage ballast water treatment** with Danfoss and Bawat

With the support of Danfoss heat exchangers and frequency converters, Bawat has devised a unique technology. It is simple and cost-efficient and will help shipowners treat their ballast water. No need for any chemicals, UV, filtering or post-treatment.

Treat your ballast water and eliminate harmful organisms at temperatures as low as

64°C



Untreated ballast water has been identified as the second biggest threat to global biodiversity after climate change. Following years of inaction, the shipping industry is addressing the issue and fighting the spread of invasive species.

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A major threat to marine biodiversity

Ballast water typically contains a variety of biological materials, including plants, animals, viruses, and bacteria.

The introduction of non-native species is one of the major threats to marine biodiversity as identified in the Convention on Biological Biodiversity. The non-native species from ships' ballast water, in addition to other sources, is causing increasing concern and is a potentially serious problem in all coastal marine ecosystems.

"The discharge of untreated ballast water causes enormous damage to our marine ecosystems," states Kim Diederichsen, the CEO of Copenhagen headquartered Bawat.

"Every year, ships transport about 10 billion tons of ballast water around the world. This is fundamental in stabilizing ships and compensating for different cargo loads.

Apart from transporting water, around 7,000 marine species hide away in ballast water tanks – picked up in one place, e.g. Singapore, and deposited in another, such as Rotterdam. When released into new environments and ecosystems they

can negatively impact native flora and fauna. This causes both environmental and financial harm," he says.

60,000 vessels to treat their ballast water

The ratification of the International Maritime Organization's Ballast Water Management Convention in conjunction with strict regulations from the United States Coast Guard, means that more than 60,000 vessels in the world fleet are now required to install Ballast Water Management solutions. Such technology is designed to eliminate or neutralize organisms within ballast water and put a halt to further invasions.

Compliance with the Convention's discharge criteria is a necessity for global trade. Non-compliance will impact shipping businesses, for example, potential penalties of USD 30,000 for ships discharging untreated ballast in US waters.

"The regulations effectively mark the dawn of a new era," states Diederichsen. "Compliance can be easier said than done. With a short timeframe to conform and an array of Ballast Water Management technologies to choose from, much of which can be complex, unproven and expensive to operate. That's where Bawat steps in to help."

A new era for In-voyage Ballast Water Treatment

The Bawat system treats the ballast water during voyage, ensuring that crews can focus on their essential tasks in ports.

Bawat utilizes pasteurization:

"The Bawat system could not be simpler,"

says Henrik Jorgensen, Sales Engineer at Danfoss, "Essentially it works by heating the ballast water to eliminate any potentially harmful organisms. The process is effective at temperatures as low as 64 degrees centigrade. There is no need for any chemicals, UV, filtering or post treatment holding time. The system is compact enough to fit inside a 20' container and is effective in a one-pass solution."

Optimal performance with heat exchangers

The heat for the pasteurization process is obtained from surplus heat produced by the ship's engine. Here, Danfoss plays a pivotal role, providing its SONDEX® plate heat exchangers and frequency converters to enable the procedure.



The SONDEX® plate heat exchangers from Danfoss are the core of the technology and they provide the optimal performance we need. The fact that heat would otherwise simply be wasted makes our solution the most innovative, green, and sustainable system on the market.

Kim Diederichsen,
CEO of Bawat



Want to learn more about the best-in-class plate heat exchangers?

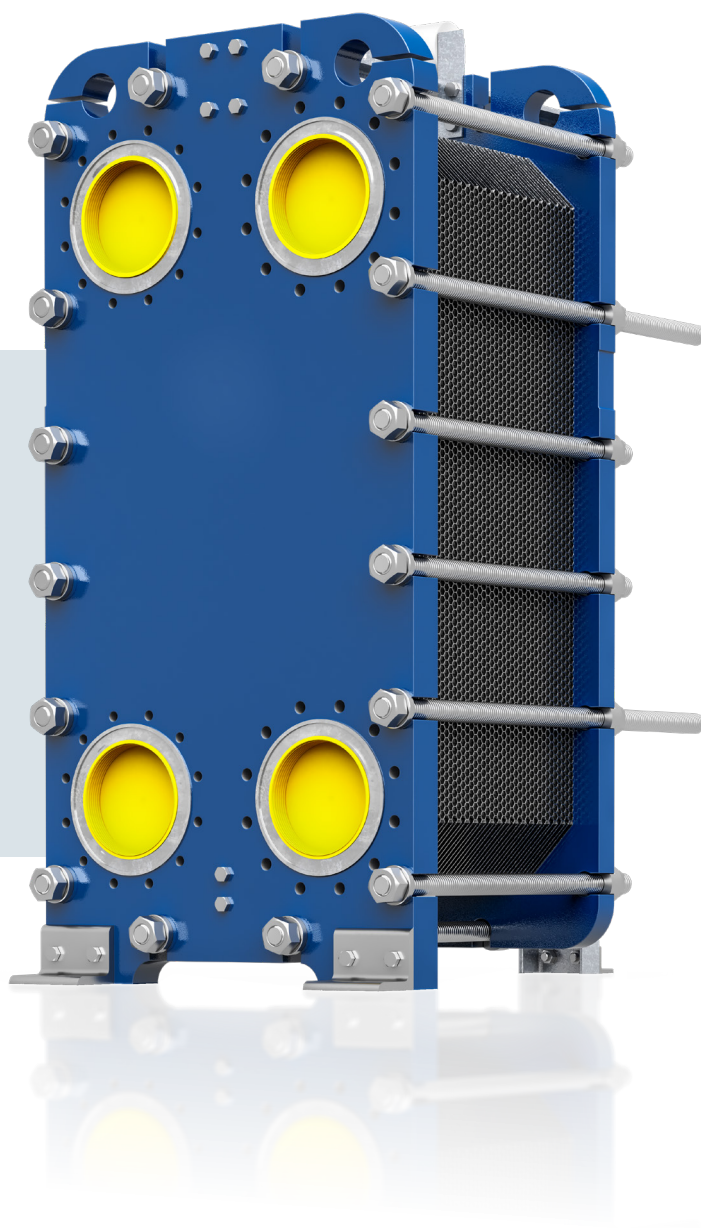
At Danfoss, we help professionals all over the world reduce energy consumption and increase heating efficiency with our wide range of plate heat exchangers.

If you would like to know more about how we can help you succeed, please visit heatexchangers.danfoss.com or contact your local sales representative.

Facts about SONDEX® heat exchangers

SONDEX® is the leading global market player in heat transfer technologies and offers the world's most extensive product range in plate heat exchangers with connections from 25mm to 650mm in diameter.

SONDEX® plate heat exchangers offer both standard solutions and custom-made heat exchangers adapted for flow, pressure, and temperature in transmission and distribution grids.



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Heating Segment • sondex.net • +45 7630 6100 • E-Mail: info@sondex.dk

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