



SPECIMEN



Keeping cool

WHEN THE HEAT IS ON

German-based HEAT Nord GmbH designs, manufactures and installs Thermal Antifouling Systems (TAS) for vessels' box coolers to improve cooling performances and prevent marine growth. Two decades on from its first innovation, the company is thriving and enjoying winning new contracts to help reduce ships' operational and maintenance costs, and protect our seas and rivers from pollution. Profile by Andy Probert.

Established in 2000, HEAT Nord, adopted by Hoeffler Engineering and Technology, produces tailor-made, patented Thermal Antifouling Systems (TAS) to not only boost the cooling performances for propulsion and generator engines, but to minimise ocean pollution.

Given today's worldwide publicity at the plight of the planet's polluted oceans, it's a moot point that not more ship owners haven't converted over to HEAT Nord's TAS and iTAS solutions.

The Rostock-based company, founded by current CEO and career marine engineer Gunter Hoeffler, has fitted systems to vessels for merchant shipping companies such as Intership and Briese Schifffahrt.

Efficient solutions

In 2020, the company won an order from shipowner Spliethoff to fit 16 TAS and iTAS-box coolers to two new-build DP2 B-type vessels currently under construction at Fujian Mawei Shipyard in China.

"This is a more complex system and a first for us," remarked Mr Hoeffler. "Spliethoff wanted to utilise our antifouling system in combination with heat recovery. So we not only protect the cooler, but we go to the next level by providing heating as well.

"The dual solution is ideal for new vessels, and potentially retrofits for vessels that are already running. It's a highly technical project, and will be using 600kW of heat from the different water systems. So what we don't cool, we use back in heating on the vessel."

A box cooler is effectively a vessel's water cooling system fitted to the sea chest. The system allows cooling seawater to enter, flowing through the bundle to the outlet grid, cooling the water inside the tubes. Cooling is achieved by the forced circulation of seawater when the vessel is moving or stationary.

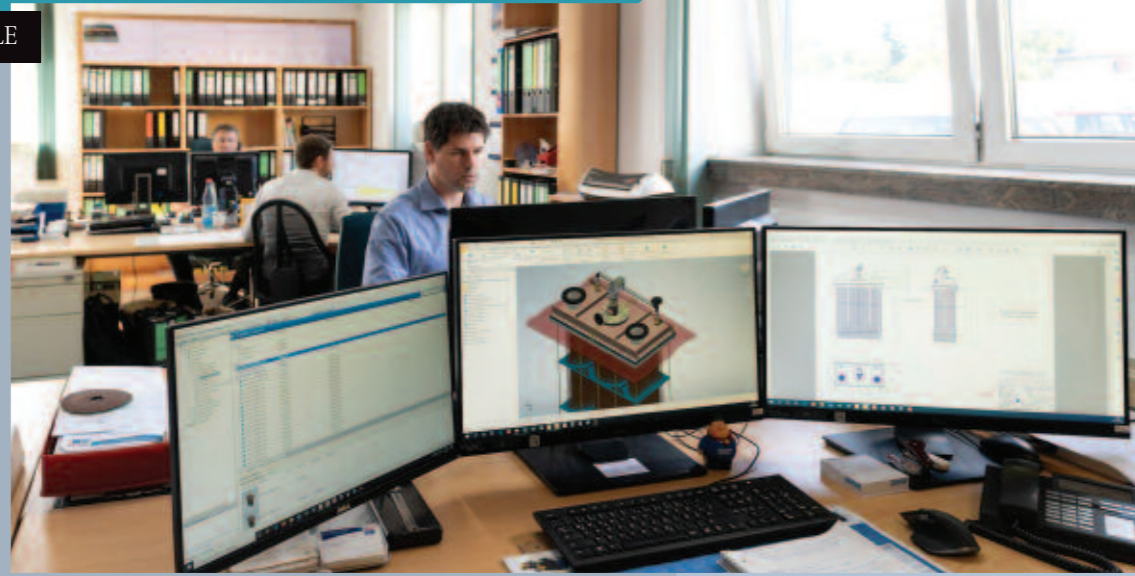
HEAT-Nord's fast and efficient solutions sit inside the sea chest, protecting the box cooler during each harbour stay. The company's integrated TAS option (iTAS), mounted on the box cooler cover and accessible from the engine room, protects the box cooler when the main engine is running around the clock.

Mr Hoeffler explained that a proper working antifouling system for the box cooler is of immense importance to ensure the cooling performances for propulsion and the generator engines.

Conventional sea chest coolers are below the waterline and used to keep the cooling water circuit of the ship's engines at an optimal temperature with the flowing seawater and dissipate heat. However, within a short time, microorganisms exposed to heavy vegetation (fouling) in seawater can reduce the cooling effect resulting in higher fuel consumption.

Win-win situation

HEAT-Nord's TAS is a technical solution that makes use of a well-known effect: microorganisms die at an ambient temperature higher than 60-65°C. Part of the ship's engine waste heat is used in the TAS-technology to produce interval-



controlled and partially heat tubes of the heat exchanger to prevent growth.

“It’s a win-win situation as TAS protects the environment, provides full cooling capacity, increases the cooler’s reliability and reduces energy and cleaning costs,” declared Mr Hoeffler.

“TAS and iTAS ensure bigger lifetime cycles of the box coolers, contribute to more sustainability in the vessel operation, avoids pollution of copper or chemicals, and reduces the carbon footprint.”

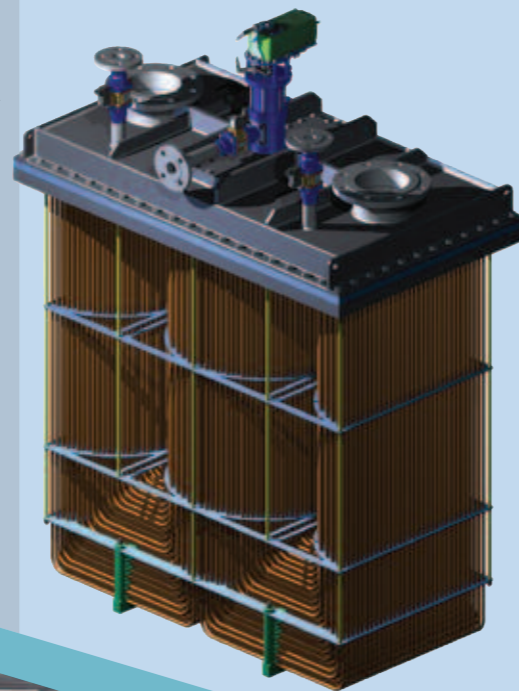
According to the CEO, the addition of the HEAT Nord solutions has helped to avoid extra fuel consumption and to reduce fuel

use by heat recovery integration during ship operations.

TAS and iTAS also offer a safer alternative than pollutant copper anodes and chlorination systems which contaminate seawater with harmful substances and are still used with minimal success.

“These copper anodes assembled within the box cooler also pose a significant risk of corrosion to sea chest steel plates,” he said.

With more than 15 years’ practical application, the TAS/iTAS solutions have also been utilised by the German Federal Government of Navigation and



Hydrography (BSH), as well as offshore and special vessel operators like Fairplay, Boskalis and DEME.

Driving back costs

HEAT Nord has also installed units on the world’s first LNG powered dredger, Minerva, built by IHC-Merwede in the Netherlands.

Further to the TAS and iTAS systems, the company has also designed a flow support device called Flow-Star FSD-160 to help generate better flow in the sea chest and offers bigger cooling capacities amid turbulent seawater flow.

The Flow-Star has been a big hit with HEAT Nord’s client Viking Cruises, for its river cruising vessels in the hot summer

of 2018 to raise up the cooling system performance for vessels cruising in the Danube River and Black Sea waters.

Mr Hoeffler asserted: “Shipping will need to change fast to become an environmentally friendly and sustainable industry. So suppliers will have to develop new or adapt existing products. HEAT Nord is continually evolving its technologies, such as improving our iTAS solution.

“While competition is increasing, there is a drive for customised box coolers which unite the cooling function, cooler reliability and performance by using waste heat from the vessel and replacing contaminating copper anodes.”

The company has also sought to use GRP material instead of other mate-

rials in the box cooler to help improve overall performance.

“From the first initial consulting over design, production up to installation and repair, HEAT Nord offers a full range of customer service. We are a serious partner on clients’ projects and thoroughly understand the processes they require.”

Mr Hoeffler said: “When you use box coolers instead of plate coolers you can save for each Kilowatt of the main engine around €3 per year. So for a 10,000kW engine, you can save €30,000.

“The use of our technology can give real benefits to the shipowner, protect the environment and reduce pollutions of our seas and rivers on a global scale.”

