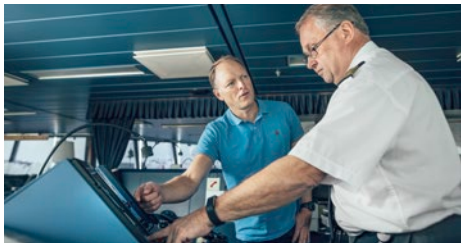
STENA TEKNIK

Stena Teknik is a technical resource for Stena's marine-related business areas, to increase their competitiveness and develop techniques to handle the Group's vessels on a safe, environmentally friendly and effective basis. Stena Teknik plays an important role in achieving the vision of environmentally-neutral transport. An intensive effort is being made to optimise existing and new ferries' design, in order to reduce fuel consumption and increase load capacity.

At the start of the year, the last of the 13 IMOIIMAX tanker vessels for Stena Bulk was delivered, and the work on a bunker vessel for Stena Oil continued. In addition, Stena Teknik also supported the newbuilding of eight RoPax vessels in China that will be among the most energy efficient of their type. The hull and engine system have been further developed, and the ferries are built to run on different fuels, and prepared for purification equipment such as scrubbers or selective catalytic reduction. Stena Drilling's drilling rig, *Stena Don*, has been positioned solely using propeller force in drilling operations. New requirements have been introduced for the positioning system to be supplemented with an anchoring system. he new system will make the rig more flexible, with the capability of operating in several types of environment, at varying water depths.

FOCUS ON ELECTRIFICATION OF VESSELS

A project for the gradual introduction of battery operation of Stena Line's vessels was commenced during the year. Batteries were installed onboard *Stena Jutlandica*, with the economic support of the EU and the Swedish Transport Administration. When the vessel is in port, the power-consuming bow thrusters run on batteries, which reduces both noise and environmental impact. In the next phase, planned to commence in 2019, battery operation will be connected to two out of four main engines, so that *Stena Jutlandica* can run solely on electricity in inshore waters. The final goal is for the ferry to run solely on electricity for the entire route between Göteborg and Frederikshavn, equivalent to around 50 Nm. Battery-based propulsion can completely eliminate emissions to air. Batteries will gradually be installed on additional ferries in Stena's fleet, reducing the ferries' environmental impact.



OPTIMISED FUEL CONSUMPTION WITH AI

Stena Teknik has joined forces with Stena Line on developing a system to collect and compare data for optimisation of vessels' fuel consumption. This has now been taken a step further with Stena Line's operation of an AI pilot project aimed to streamline shipping operations in different routes. A similar system has been developed by Stena Bulk. The company's digital platform Stena Orbit provides real-time control of energy use, and directly raises the alarm in the event of any deviations. This has contributed to the company's radical reduction of energy use.

IMPROVED FIRE SAFETY IN THE INDUSTRY

During the year, in cooperation with Stena Line, Stena RoRo and Northern Marine, Stena Teknik drew up a fire safety standard for implementation on all vessels in the Group. The safety level is now assumed to fulfil the requirements being considered within international organisations such as the IMO and European Maritime Safety Agency (EMSA) who are taking an interest in this work, which is now being disseminated as a new standard throughout the industry.

STENA TEKNIK FACTS

20
Employees

9
Newbuildings on order

WE PROVIDE MARINE TECHNOLOGY EXPERTISE FOR INCREASED COMPETITIVENESS

> With our expertise, experience and, most of all, curiosity, we look forward to meeting future sustainability challenges.

Harry Robertsson
Technical Director

VISION OF ENVIRONMENTALLY-NEUTRAL TRANSPORT: STENA ELEKTRA

As a key element of Stena's vision of environmentally-neutral transport, Stena Teknik has developed the Stena Elektra concept, a hybrid vessel that is planned to run on electricity and serve the Göteborg-Frederikshavn route, or other services of up to 50 nautical miles. Battery-based operation can completely eliminate emissions to air. By removing the engines and all appurtenant systems, there is no need for bulky engine rooms, but solely space for electrical motors and batteries.

The vessel is still being developed and there are many challenges to overcome before this new technology is achieved in practice. In view of the pace of current development in terms of battery capacity and reduced battery prices, it is only a matter of time before Stena Elektra is achieved.