

Case study | VACON® NXP Liquid Cooled Drive

STX ocean research vessel **meets 2025 efficiency targets, today**

Leading Korean shipbuilders enhance their vessel performance with assistance from Danfoss for optimized operation, increased efficiency, improved quality, and greater customer satisfaction. Danfoss delivers innovative marine solutions introducing new standards for energy efficiency, expanding opportunities for the shipbuilding industry.



30%
more energy
efficiency

Energy-efficient vessel of tomorrow....

STX Offshore and Shipbuilding Co., Ltd, one of world leading shipbuilding companies in Korea, has been working with Danfoss to build an efficient and reliable drives solution for a large ocean research vessel based in Korea.

In operation since 2016, this vessel is equipped with Danfoss solutions that have made it safe and highly energy efficient on its voyages in the ocean worldwide.

The 5,900-ton ocean research vessel is equipped with Danfoss' electrical

propulsion drives system, which has been designed to help explore the world's marine resources and respond to changes in our Earth's environment, and has been built in line with the Korean Government and International Maritime Organization's energy-efficiency requirement to be 30% more energy efficient to build a sustainable marine industry by 2025.

... traversing the oceans today

The vessel has traversed oceans worldwide, equipped with Danfoss solutions for extremely safe, highly efficient performance. STX required drive

solutions that could interface with all other electric propulsion systems, to reduce the overall cost of installation, operation and maintenance. In addition, low noise and low vibration levels were also required for the applications on this special vessel, to ensure no interference issues whilst investigating marine resources. To meet these needs, Danfoss recommended the VACON® NXP Liquid Cooled Drive, that not only meets the client's requirements for energy efficiency and low noise levels but is also fit for the most demanding environments.

20% cost savings with segmented electrical propulsion systems

Instead of ordering a bundled system package, STX and Danfoss achieved a more economical combination by individually selecting each element of the power package. This flexible approach was possible thanks to the close communication and cooperation established between STX and Danfoss.

Offshore and shipbuilding companies often request a system that builds collectively many elements of the system package. Meanwhile, based on energy efficiency considerations, Danfoss proposed a segmented concept which spilt the system package into individual components, including propulsion drives, switchboards, and motors. This flexible approach is based on a clear understanding of its own technology capabilities, strengths and weaknesses. Through these efforts, STX was able to save about 20% of its cost compared to bundled propulsion systems.

By subdividing each element of the power system, STX gained new insights and a deeper understanding of propulsion drives and automation systems. This approach also helps other customers make more affordable facility investment decisions in the long run. And the component optimization approach has helped STX and other customers achieve tomorrow's targets, today.



Each component is optimized for performance and cost. The propulsion system is equipped with VACON® NXP Liquid Cooled Drive.

Heightened uptime and compact footprint

Danfoss considered the needs of STX, who required stability, heightened uptime, and efficiency, as well as decreased noise and vibration. Danfoss was able to meet these requirements using the VACON® NXP Liquid Cooled Drive, which is also designed for high performance in demanding environments.

With its reduced size, reliable operation, extended uptime and efficiency compared to conventional drives, this drive is the best choice for marine operators who need to minimize maintenance management losses. Danfoss' efficient space design has helped to limit the impact of harsh

external environments to a minimum, and drastically reduced the overall cost in installation, operation and maintenance.

Engineering tomorrow

STX meets the demands of tomorrow today, thanks to Danfoss' reliable drives technology. Danfoss has steadily developed technologies to cope with the challenging nature of the marine industry and respond appropriately to global warming and climate change. Reliable and energy-efficient solutions from Danfoss are based on an in-depth understanding of the issues facing our marine customers. Reliable technology prevents unexpected costs and gives customers the freedom to focus on tomorrow's opportunities.