

Commercial barges stay afloat thanks to VFD controlled pumps

Case Study



 Netherlands

Company / Project

DE GROOT DIESEL MARINE SERVICES

Applications

Water Pumping

Global sales, service & application support network in over 80 countries

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Optidrive E3 helps firm save money on energy bills

Optidrive E3 variable frequency drives (VFDs) from Inverter Drives have completely automated the control of pumps used to fill and empty ballast tanks on board commercial barges in the Netherlands – saving manpower, time, energy and money.

Located at the bottom of the vessel, ballast tanks are designed to add weight to aid stability when the vessel has no cargo, and to enable the craft to pass underneath low bridges. They are filled with water pumped from the river or canal and then emptied again as soon as the bridge has been successfully cleared, or cargo taken on board.

As well as a faster and more reliable filling and emptying process, operators of commercial vessels that use VFD controlled ballast pumps also benefit from less fuel and energy consumption, which also saves money.

Automated control of the tanks mean they are emptied as soon as the excess weight is not needed which reduces drag, whilst controlling the pump speed and starting / stopping reduces the peak load on the vessel's electrical system. Reducing fuel and energy usage is a vital consideration in the shipping industry which is required to adhere to strict international emissions regulations.

The Optidrive E3 from Inverter delivers reliability, high performance and efficiency in a compact, easy to use unit which is ideal for marine environments. Available in enclosure ratings **IP20** and **IP66**, Optidrive E3 offers conformal coating and is designed to operate trouble-free in the 50°C temperatures frequently found in environments such as vessel engine rooms.

John van der Lugt, Sales Manager at Hiflex, Inverter's sales partner in the Netherlands, explains, "We were approached by VDE Marine, who designed the automated solution to control the ballast pumps made and installed by its customer De Groot Diesel Marine Services."

The frequency of bridges on the Netherlands' canal network means the tanks need to be filled and emptied again as quickly and easily as possible, whilst the volume of water used meant VDE Marine needed a high-performance variable speed drive capable of consistently controlling the 11kW motor.



"It is simply not practical to manually control the pumps every time the tanks need filling or emptying," continues **John**. "Remote control ensures the pumps can be activated from inside the wheelhouse via the Optidrive E3 without the operator having to physically start and stop them."

Thanks to the remote control functionality, the barge's operator is able to switch the AC inverter on and off, change the setting on the pump from full to empty, amend the pump speed, and open and close the valve relay whenever required using the drive output relay.

When the valve is being closed, the Optidrive E3 drive controls the pump speed to ensure water from the river or canal does not flow back in to the ballast tank – a vital consideration when emptying the tank.

Variable frequency drives, including DNV accredited products, from Inverter Drives are used in a huge number of motor control applications including a wide variety of operations in the marine industry such as winches, pumps, cranes, bow thrusters and compressors.

John comments, "The pump motor, controlled by the Optidrive E3, enables 1.1 million litres of water to be pumped every hour if required. The complete system was commissioned before being fitted on the barge to ensure the on-board installation was as quick and simple as possible.



“The first installation was so successful that VDE Marine’s customer has ordered additional drives to enable it to supply a completely automated solution for filling and emptying ballast tanks destined for a range of commercial vessels.”

Invertek Drives has extensive experience in energy efficient pump control and can even manage multiple pumps at the same time thanks to Optiflow technology. Find out more by watching this short YouTube film.

Pump control system specification:

- Mainswitch on cabinet
- Invertek ODE-3 drive with motor (max 11kW)
- Powersupply valve
- Valve relay
- Remote control with 20m cable
- Feedback for valve on Remote Control
- Capability: 1100m³/hour -> 1.1 million litre/hour

Please follow this link to find out more about how Optidrive variable frequency drives from Invertek Drives are used in the marine industry. More details about Optidrive E3 can be found by downloading the E3 brochure.

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