PMH
NORWAY

VESSEL CONTROL

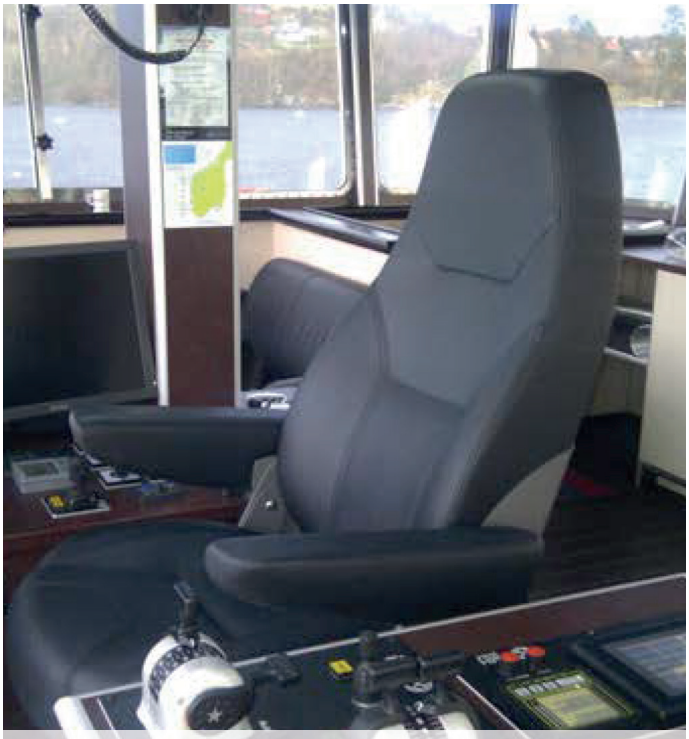
PETTER'S MARINE HYDRAULICS has since 1967 manufactured and delivered equipment to the off-shore, fishing, shipping and aquaculture industries, and has in the latest years focused on technologies for advanced control systems for vessel control and maneuvering. This includes the MOTOR, PITCH AND THRUSTER CONTROL (MPTC) system and the KEEP POSITION (KP) system, which are highly advanced systems for ship automation and control. With **PETTER'S MARINE HYDRAULICS'** vessel control systems a vessel will be able to operate in more demanding environments and tougher condions, providing **EXCELLENT** performance and high **RELIABILITY** in a **COST EFFICIENT** way.

MPTC

The "MOTOR, PITCH AND THRUSTER CONTROL" (MPTC) system is a vessel control system that allows for both total and individual control of bow and a thrusters, rudders, pods, propeller pitch, PTOs, gears, clutches, engines frequency converters. This system also monitors oil and fuel tanks, tank levels, oil temperature and so on. For hydraulic systems, the MPTC system acts as an insurance against mechanical breakdown and wrong use of your hydraulic equipment, where the system never allows you to overload you PTOs. All system configuration options and monitored parameters are displayed on displays on operator stations, where the operator gets a full overview of all commands given, amount of thrust both applied and available, together with other desired information that is critical to the current operation. The MPTC system supports multiple operator stations. Every installation is tailored to the individual vessel, ensuring full maneuvering capability and control over the vessel's propulsion and hydraulic equipment.

Alarm logging services keeps track of both present and historical warnings and alarms, providing a service engineer with all the information on a specific problem, which helps keeping service me and down periods to a minimum. Through the alarm services, recommendations for periodical services will also be presented, making planning of upcoming services easier.

Operator display KP-200 and KP-300

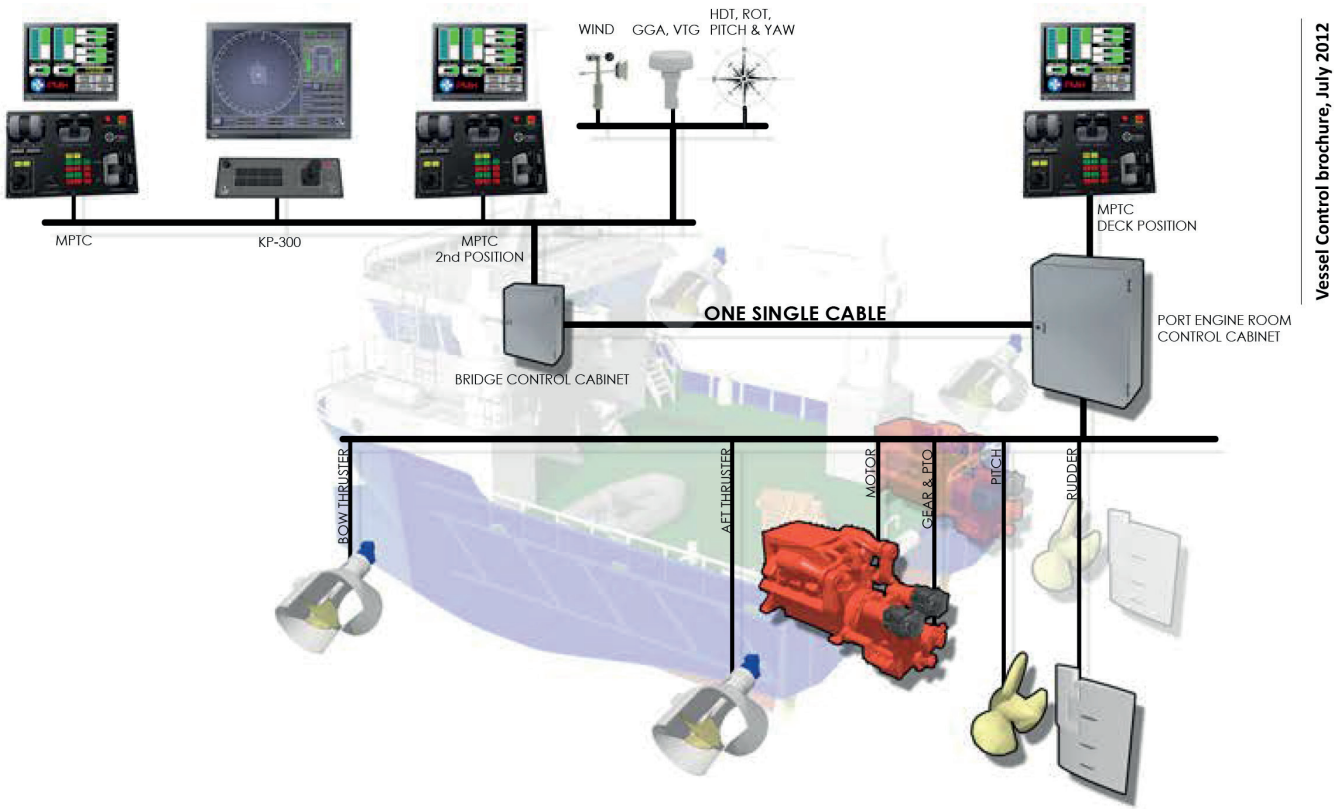

MPTC control panel at the main operator station on board MS Tørris.

KEEP POSITION

The "KEEP POSITION" (KP) system is one of **PETTER'S MARINE HYDRAULICS'** newest technologies in positioning and maneuvering systems. The KEEP POSITION system is specified and designed around the requirements presented by the aqua culture industries, which daily are involved in many different types of operations. One of the many advantages with this system is its flexibility, where **PETTER'S MARINE HYDRAULIS** present three different options with a variety of functionality, at the most competitive price in the market.

The KP system is now available with its brand new graphical user interface (GUI), with a modern look and easy to use layout. The GUI only displays data necessary to the operator for the given operation, reducing the risk for information overload and contributes to a better working environment for the users.

For each and every KP-vessel, and before the system is commissioned, **PETTER'S MARINE HYDRAULICS** simulates and analyzes the vessel with regard to environmental requirements and available maneuvering power. Based on these results, tuning of the vessel becomes easier and quicker, and if necessary; recommendations can be made at an early stage and actions taken to increase maneuverability. The KP system is tuned to the individual vessel, and optimized with respect to the vessel's area of operation, which reduces both wear and tear on the vessels propulsion equipment and brings down the fuel costs.In situations where weather causes manual operations to seasdue to increased risk, **PETTER'S MARINE HYDRAULICS'** KP system will expand the window of operation, making the operation both safe and reliable. Being able to perform an operation in diffcult conditions reduces "waiting on weather" periods, ensures cost effciency and keeps the project or delivery on schedule.



KP-100

KP and Joystick-mode

The KP-100 system is a dynamic positioning system with the most basic of functions, for vessels without special requirements for extra features. KP-mode keeps your vessel in a desired position and heading, where the joystick lets you step your position in prefixed steps. Using Joystick-mode makes docking and maneuvering both quick and easy, as the KP system directs all propulsion and maneuvering equipment to move the vessel in the desired direction.

KP-200

KP, Joystick, Auto Heading and Auto Speed-mode

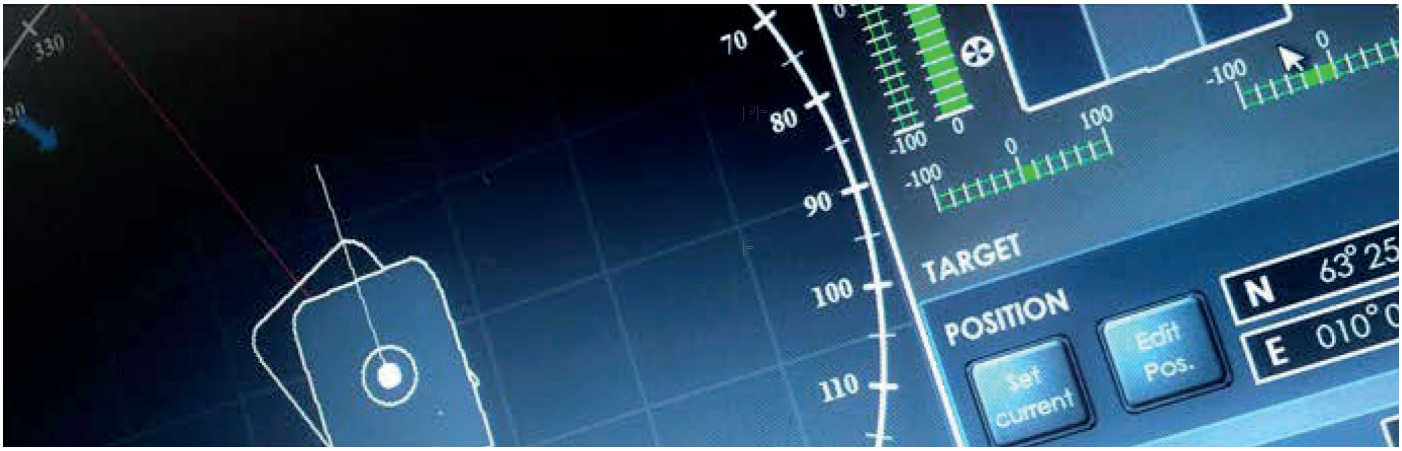
The KP-200 adds the Auto Heading and Auto Speed-mode to the system, together with a Graphic User Interface (GUI) that displays a variety of data from weather sensors, positioning systems, feedback form propulsion equipment etc. The GUI also lets you configure a variety of parameters to prepare the vessel for a specific operation, with respect to weather, position accuracy and safety. The Auto Heading/Auto Speed-mode lets you direct the vessel in a desired heading and speed, compensated for drift due to wind and current.

KP-300

KP, Joystick, Auto Heading, Auto Speed, Go-To-Target, Follow Route, Follow ROV and ECO-mode

In addition to all functions included in the KP-100 and KP-200, the KP-300 adds Go-To-Target, Follow Route, Follow ROV and ECO-mode, together with an extended GUI. Go-to-Target and Follow Route-mode lets the vessel go to a defined position or follow a given route. If the operation calls for a fixed heading whilst moving, this can be forced with a simple push of a button. Once the vessel has reached its target posion, a nofication is given and KP-mode is engaged.

Follow ROV-mode enables the vessel to follow in the tracks of a ROV/target engaged in an operation, at a fixed distance, heading and bearing. While in Follow ROV-mode, the vessel's attitude can be altered by the joystick and optimized relative to the ROV's position to stay clear of the umbilical or obstacles. EECO-mode presents slacken requirements in regard to position accuracy and drift compensating response, allowing for slower ramp rates and lower RPMs. This eases stress on the machinery, gives less wear and tear and contributes to reduced fuel costs.



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STANDARD **MANEUVERING** SOLUTIONS

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