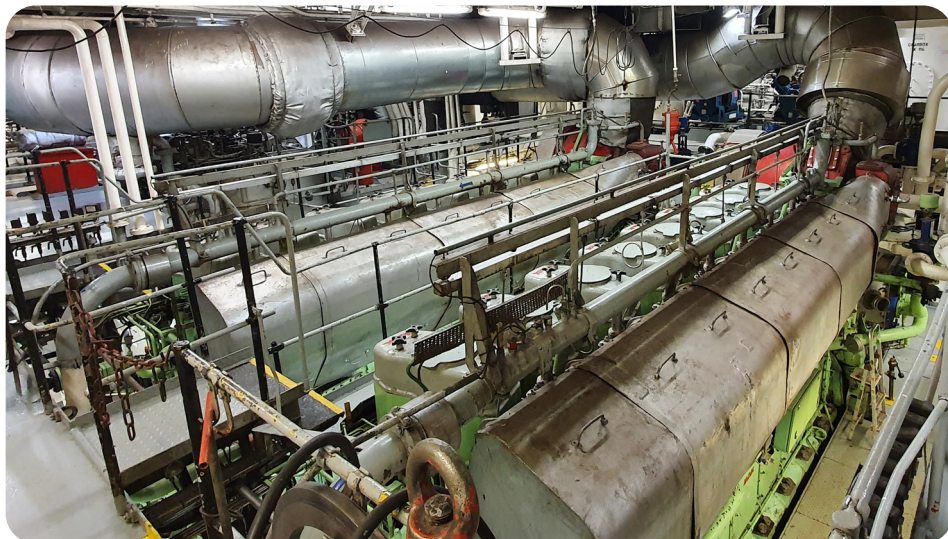


October 2021

Cruise ferry Control Upgrade

Speed, Load, Clutch and
Propeller Phase Control



Introduction

Due to parts obsolescence Turner ECS received the order to replace the Woodward main twin engine propulsion cabinets installed on-board the DFDS Princess Seaways. Components replaced are a Woodward 723+ speed/load control and a Siemens PLC based clutch control. In addition, to reduce vibrations and fuel consumption, a propeller phase controller has been installed using Woodward's Flex 500 hardware platform. This controller is used for matching the phase of the two propellers and initial measurements indeed show less fuel consumption and vibrations. This would increase the comfort rating from CR#3 to CR#2 as per DNV comfort class. Three 15-inch HMI's are installed across the vessel for alarm/status indication and propeller phase control configuration.



FEATURES

Propulsion control

- Single or double engine on single gearbox
- Mechanical loadsharing
- Automatic transfer
- Shaft generator mode
- Local/remote control

Genset control

- Generator loadsharing

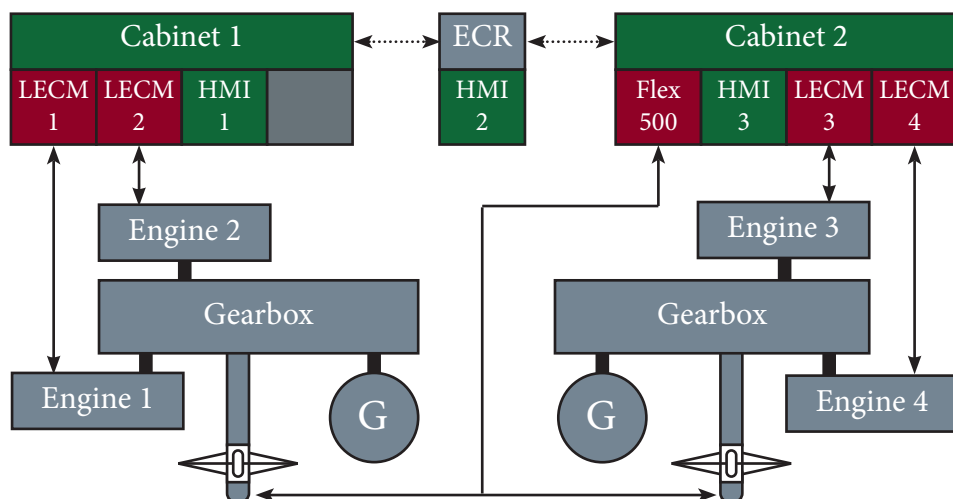
IMPROVEMENTS

- Improved mechanical load sharing using fuel rack sensors
- Reduced smoke using speed and MAP based fuel limiters
- Reduced vibration
- Improved speed sensing accuracy using engine firing frequency filter

FACT SHEET

Engine OEM: MAK
Engine Type: 8M552
Ship Name: Princess Seaways
Ship Builder: DFDS
Route: IJmuiden
Newcastle
Capacity: 1200 guests
600 cars

System Overview



Latest Woodward Hardware

To maintain highest hardware quality and accuracy to control speed, load and synchronization the existing Woodward 723+ control has been upgraded to a Woodward LECM (Large Engine Control Module). The existing clutch control logic has been included in the LECM as well. To fulfill class requirements, fail-safe CAN communication lines between the units have been installed for load sharing and clutch synchronization. Further improvements include installation of fuel rack sensors which allow more accurate load sharing using actual fuel rack position instead of actuator demand. The new hardware allows the customer to take complete ownership of the system with unrestricted access to both the application software and all system diagnostics using dedicated software tools.



HARDWARE

1 x Woodward Flex 500

- Propeller Phase Control



4 x Woodward LECM

- Speed Control
- Load Control
- Clutch Control



3 x Human Machine Interface

- Touch panel
- Customized software

Hardware replaced

- Woodward 723+
- Siemens PLC



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Turner ECS delivers reliable retrofit solutions for a wide range of prime movers and other applications. This includes lump sum turnkey projects on turbines and compressors.

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Turner ECS has the largest stock of parts, service exchange governors and electronics in Europe and can provide a fast turnaround service.

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- The Netherlands
- England
- Germany
- Italy
- Abu Dhabi
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- Saudi Arabia

Turner ECS also operates and manages an extensive network of official agents throughout Europe & the Middle East

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