

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

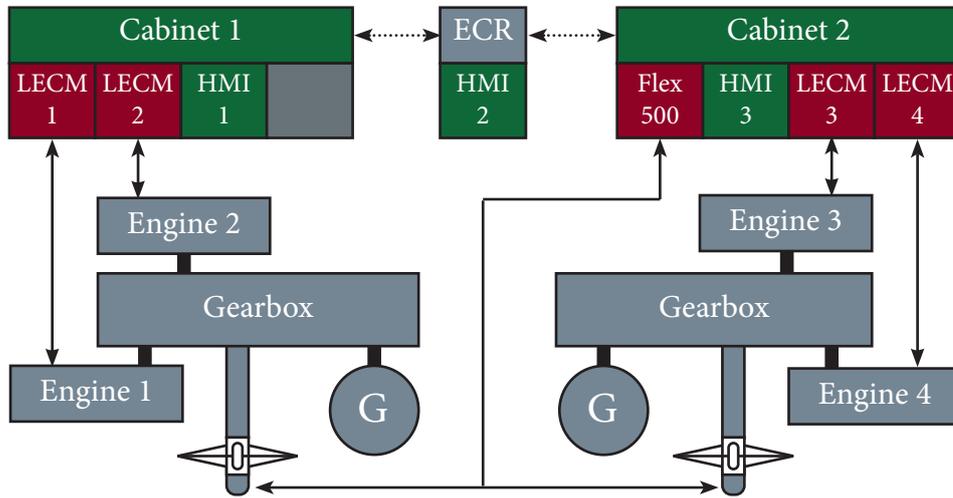
## IMPROVEMENTS

- 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



## Turner Range of Services

**LSTK Projects, Retrofits & Upgrades**  
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.

**Genuine Parts & Service Exchange**  
Turner ECS has the largest stock of parts, service exchange governors and electronics in Europe and can provide a fast turnaround service.

**Product Training**  
Turner ECS can provide official Woodward product training covering both theoretical and practical training on a wide range of Woodward products.

**Electronic Repair & Mechanical Governor Overhaul Service**  
Turner ECS provides a comprehensive overhaul and repair service for electronic, mechanical and hydraulic governors.

**World Wide Field Service**  
Turner ECS field service engineers and technicians provide comprehensive solutions for commissioning and on-site repair.

**Service Contracts**  
Turner ECS provides long term service contracts to support users with Woodward governors and/or control products and electronic control systems.



### ROTATING EQUIPMENT CONTROL SOLUTIONS DELIVERED ACROSS EUROPE & THE MIDDLE EAST

Turner ECS is an official Woodward Channel Partner with offices located in:

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

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

### CONTACT INFORMATION

Turner Engine Control Solutions B.V.  
Dirk Storklaan 76  
2132 PX Hoofddorp  
The Netherlands

Mail: [sales@turner-ecs.com](mailto:sales@turner-ecs.com)  
Tel: +31 (0) 23 566 23 00  
Fax: +31 (0) 23 564 27 27  
Web: [www.turner-ecs.com](http://www.turner-ecs.com)

