



Twin Disc transmission and controls power Potomac cruise vessel



Vessel:	240-foot by 63-foot dinner/cruise ship
Refitter:	Colonna's Shipyard
Company:	Potomac Riverboat Company, part of Entertainment Cruises family of brands
Location:	Potomac River
Transmission:	Twin Disc MGX-5170DC gears with 4.5:1 reduction ratio
Engines:	Twin Cummins Tier 3 QSK19 diesel engines
Power:	600 HP @ 1800 rpm each
Controls:	Twin Disc EC300 control system
Bow Thruster:	Powered with a Twin Disc MG-5050 transmission



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Entertainment Cruises turned to Twin Disc and Great Lakes Power to provide the best powertrain solution with a quick turnaround time.

Situation

Entertainment Cruises, North America's largest dining and sightseeing cruise company, has a fleet of 53 ships in cities across the U.S. and has expanded services into Canada. Each year, the company operates more than 10,000 cruises, serving more than 2.6 million guests.

Implication/Problem

Potomac Riverboat Company is part of the Entertainment Cruises family of brands, providing private charters, sightseeing and water taxi cruises in the Washington, D.C., area.

The M/V Odyssey III is one of the stars of the Potomac Riverboat Company's fleet. Built in 1995, the steel-hulled vessel is specifically designed to pass under bridges on the Potomac River in and around Washington, D.C.

In early 2019, the 240-foot by 63-foot dinner/cruise vessel received a \$2.2 million renovation and repower, funded by a competitive grant from the U.S. Environmental Protection Agency's Diesel Emissions Reductions Act (DERA) Clean Diesel Funding Assistance Program.

Because of the lengthy approval process for the funding, which was received in December 2018, Entertainment Cruises faced a very short timeline to get the Odyssey III refitted and back on the water in time for the Washington, D.C., Cherry Blossom Festival in March 2019.

Solution

On January 2, 2019, the Odyssey III arrived at Colonna's Shipyard in Norfolk, Virginia, for the refit, which had to be completed within two months. Cummins Inc., a global provider of high-speed, high-horsepower engines, received the contract to repower the vessel and brought in Great Lakes Power, a Twin Disc service partner, to provide the best powertrain solution.

During the renovation, workers replaced the vessel's old 540 HP engines with twin electronically controlled Cummins Tier 3 QSK19 diesel engines, producing 600 HP at 1800 rpm each. Great Lakes Power connected the engines to the boat's props through Twin Disc MGX-5170DC gears with 4.5:1 reduction ratio.

The refit hit an unexpected roadblock when it was discovered that an important component had been left out of the power train specification. Twin Disc experts were able to quickly engineer a custom transmission solution for the vessel's emergency backup throttle system and obtain Coast Guard approval for the change.

The MGX-5170DC transmission is linked to the Twin Disc EC300 control system. The vessel also features a bow thruster, powered with a Twin Disc MG-5050 transmission.

Standard features of the MGX-5170DC transmission include:

- Vertical offset, cast iron housing
- Electric GP-valve with manual override
- ECO50 Profile module – interface for engagement signals
- Oil strainer and oil filter

Customers can also choose from a wide variety of options to meet the specific needs of their applications, including:

- ECO50 E-Troll module – interface for engagement & trolling signals
- Harness with single point interface to Twin Disc EC300 control system
- Oil cooler with thermostatic bypass valve
- Live or hydraulic clutchable PTO

The EC300 electronic controls features include:

- Stainless steel control head stations and independent CAN-bus networks offer greater redundancy
- Twin Disc graphic monitor

Results

The Twin Disc and Great Lakes Power teams were able to meet the aggressive timeline required for the refit. The vessel's crew has been impressed with the improvement in maneuverability and control provided by MGX-5170DC transmission and EC300 controls system.

"We're very happy with all the components and the installation work. The Twin Disc and Great Lakes Power teams were phenomenal to work with and went above and beyond to complete their part of the repower on time. The vessel is an incredibly valuable asset for us and meeting the timeline was super important."

Captain John Lake
National director of marine operations for Entertainment Cruises