

# Ferry Propulsion System

## VECTOR® COUPLINGS & COMPOSITE SHAFT

### PROBLEM

A coupling solution was needed for a new catamaran ferry propulsion system that was powered by twin diesel engines connected to a speed reducing gearbox which drives a remote-mounted waterjet or thruster pod. The coupling/shaft connects the gearbox to the water jet with a flange-to-flange span length of more than 9 feet. The gearbox is close-coupled to the engine, with both bouncing on resilient engine mounts, so the gearbox output flange has several millimeters of radial and axial movement under normal operation from vibration and sway of the engines when the hull moves on the waves.

### SOLUTION

Due to the span length and weight considerations, the use of a TB Wood's carbon fiber composite shaft mounted between high-misalignment-capacity Stromag Vector® couplings on both ends is an ideal choice for this application.

This solution eliminates multiple sections of heavy steel shafting and pedestal bearing supports. Lighter-weight, spherical bearings positioned at both ends of the shaft provide stabilization, eliminating shaft "whirl" that can occur when a shaft orbits off-axis if unsupported, especially at long lengths. The dual Vector couplings, one mounted on the gearbox output flange and the other connecting the waterjet input shaft, feature lower reaction forces and very low overall torsional stiffness.

The Vector coupling represents the next logical step in the evolution of Stromag's proven GE rubber-fabric coupling that has become successfully established in diverse applications worldwide.

The Vector coupling provides zero backlash for shaft-to-shaft and flywheel-to-shaft connections. The coupling's rubber-fabric element radial arrangement within a compact design facilitates installation and removal without the need to displace the drive units.

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MCCSS-P-8503-SG-EN-US 01/26



### HIGHLIGHTS

- Compact flexible coupling design
- Special rubber-fabric elements enhance service life
- Lightweight and easy to install
- Accommodates large shaft displacements in all directions
- Carbon fiber composite shaft



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