

# 2-in-1 PERIFLEX® VN/MWU Coupling/Clutch

## PASSENGER SHIP HYBRID PROPULSION SYSTEM

### PROBLEM

A leading global power transmission equipment manufacturer needed a coupling and clutch for its hybrid propulsion system used on a passenger ship. The 5-deck, 63.5 m long, state-of-the-art vessel treats passengers to a wide selection of amenities, including an underwater viewing area, as it cruises scenic Lake Lucerne in the Swiss Alps.

The hybrid vessel is Switzerland's first climate-neutral cruise ship with energy consumption that is 20% less than a conventional ship.

The ship's hybrid drive system combines two 405 kW diesel engines and a pair of 180 kW electric motors that are connected to the vessel's twin propeller shafts. A unique parallel hybrid transmission unit is positioned between the diesel engine and the marine gear on each of the two propeller shaft drives. The coupling connects to the diesel engine flywheel while the clutch engages and disengages the diesel engine from the driveline.

### SOLUTION

To fit within the tight space requirements, Stromag supplied a unique, compact 2in1 Periflex® VN/MWU combination coupling/clutch. Stromag's engineers performed the necessary calculations and selected both parts from Stromag's well proven product portfolio to meet the drive specifications.

Stromag's Periflex® VN (PVN) plug-in, highly flexible elastomer disc couplings reduce the transmission of torsional vibrations associated with a broad engine speed range.

Stromag MWU pole-face electromagnetic friction clutches are designed for engaging and disengaging main propulsion drives and auxiliary equipment, including hydraulic pumps, centrifugal pumps and generators in ships and vehicles. Units feature diaphragm technology for backlash-free torque transmission and disengagement free from residual torque.

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### HIGHLIGHTS

Elastic coupling and switchable clutch combined into a smart, compact design

#### Periflex® VN Coupling

- Highly flexible elastomer disc couplings with linear spring characteristics
- Torque range: 160 to 63,000 Nm
- Aluminum alloy flywheel connection ring

#### MWU Clutch

- Torque range: 400 to 7800 Nm
- Electromagnetically operated
- Four-pole technology for high power density
- Backlash-free

