Corrosion-resistant ballast system engineered for Braveheart

Bondstrand 2000M GRE piping delivers layout flexibility for high-capacity ballasting on cargo barge.

Background

Allseas' cargo barge Braveheart supports heavy-lift transfers of topsides and jackets between offshore energy installations and fabrication and decommissioning yards. Measuring 200 m x 57 m (656 ft x 187 ft), the barge can carry up to 115,307 tonnes, with deck loads of 110 t/m^2. Its fully electric ballast system uses four pumps rated at 5,900 m^3/h and integrates water treatment and tidal compensation systems to maintain vessel stability.

Since dry docking was not feasible, the ballast system required long-term durability and corrosion resistance, particularly for components exposed to seawater. Steel piping posed corrosion risks at high-stress areas such as bulkhead penetrations (BHP). Braveheart's compact design also created routing challenges.

Solution

We delivered a corrosion-resistant, lightweight ballast system designed to integrate easily with the barge's structural and operational layout.

The system included more than 1,900 m (6,200 ft) of Bondstrand™ 2000M glass-reinforced epoxy (GRE) piping, with diameters ranging from 1 in. to 60 in., along with over 100 GRE BHPs. Multi BHPs facilitated efficient routing of multiple lines through tight spaces.

Early collaboration with Allseas and the shipyard in China enabled us to optimize pipe routing and support the class approval process. Our tailored solutions included split back-ring multi BHPs to reduce installation length, as well as U-clamps and flange supports customized for lamination areas.

Results

The Bondstrand 2000M GRE piping system supports long-term performance in seawater ballast service and enables reliable, high-volume ballast control. Compared with steel, GRE piping's higher allowable flow velocities permitted smaller pipe diameters and tighter routing. This capability resolved space constraints at critical interfaces.

Early engagement and engineered components reduced installation complexity and maintenance requirements, which will lower Allseas' total cost of ownership. These improvements increased system reliability and supported successful project approval.

Case study facts

Customer: Allseas

Vessel: Braveheart

Supply details

- More than 1,900 m (6,200 ft) of Bondstrand™ 2000M GRE piping
  - Diameters from 1 in. to 60 in.
- More than 100 GRE bulkhead penetrations, including Multi BHPs

Opex benefits:

- Supports long-term service life
- Eliminates corrosion in seawater service
- Reduces maintenance requirements
- Minimizes downtime associated with corrosion-related failures
- Improves system reliability in ballast operations
- Lowers total cost of ownership