

Corrosion-resistant ballast system reduces weight and maintenance on Pioneering Spirit

Custom Bondstrand GRE piping saves 645 tonnes.



Background

Allseas' Pioneering Spirit is one of the world's largest heavy-lift vessels. Designed for single-lift platform installation and removal, it measures 382 m (1,253 ft) long—nearly the size of the Empire State Building—and 124 m (407 ft) wide and displaces more than 1 million tonnes of seawater.

The versatile vessel also installs pipelines and operates in complex offshore campaigns worldwide, where reliability and uptime are critical. Its ballast system must manage large volumes of seawater with precision to ensure stability. This demands infrastructure that resists corrosion and performs reliably over a 50-year service life.

Traditional steel piping was not a viable option, as saltwater accelerates deterioration and requires intensive inspection, repair, and replacement. At this scale, these activities are difficult to execute and make dry docking impractical.

Solution

We engineered and supplied a complete Bondstrand™ 2000M composite piping system tailored to the hydraulic demands of the Pioneering Spirit's ballast system. Approximately 8 km (5 miles) of glass-reinforced epoxy (GRE) pipe in multiple diameters and 11,000 fittings were installed.

To prevent material degradation and streamline installation, we delivered the system using a Just-in-Time approach that minimized storage time and exposure. This method reduced onsite handling requirements and ensured each component was installed in optimal condition.

By combining durable construction with precise fit-up, the GRE piping system supports reliable vessel operations and reduces maintenance demands over its service life. The nonmetallic design helps avoid failure points at bulkhead penetrations, improving performance in harsh offshore conditions.

Case study facts

Customer: Allseas

Vessel: Pioneering Spirit

Supply details

- 8 km (5 miles) of Bondstrand 2000M GRE piping - Diameters up to 1,016 mm (40 in.)
- 11,000 fittings

Opex benefits:

- Lowers system weight by 645 tonnes
- Eliminates saltwater corrosion
- Reduces total cost of ownership
- Extends operational life beyond 50 years
- Reduces maintenance requirements
- Minimizes downtime associated with corrosion-related failures
- Reduces total cost of ownership

Results

Our Bondstrand GRE system eliminated the need for cathodic protection, coatings, and routine corrosion inspections, reducing the total cost of ownership. The composite pipe's smooth internal surfaces reduced friction losses, lowering energy demand for ballast pumping and improving hydraulic efficiency.

Using lightweight GRE instead of steel reduced system weight by 645 tonnes, improving vessel efficiency and contributing to projected lifecycle savings of up to \$50 million.