Newbuild Energy-Efficient Dredger Vessels in Asian Shipyard

Bondstrand™ Fiber Reinforced Polymer (FRP) Structures

A Trailing Suction Hopper Dredger is a self-driven vessel used for open water dredging. It loads material hydraulically into hoppers with bottom gates, which are then closed and raised with cranes or winches. This dredger is commonly used in rivers, canals, estuaries, and the open sea. A hopper dredger is a self-propelling vessel that carries material in a large onboard hold known as the hopper. It can transport the load over long distances and empty it by opening bottom doors or pumping offshore. Hopper dredgers are suitable for harbor maintenance, pipe trenching, and land reclamation due to their high production rates in dredging soft non-rock soils.

Problem

The purpose of these vessels is to dredge sand, clay, sludge and gravel from sea or riverbeds, with the goal to hold as much of this as possible, keeping the vessels lightweight was crucial for our client. Our lightweight products increased productivity and efficiency, as they allow the vessels to carry a larger payload, saving time whilst reducing CO_2 footprint, as the weight capacity was maximised meaning less journeys.

Corrosion is an inevitable concern in the marine environment, our products are engineered to endure these harsh settings and have excellent corrosion resistance.

Solution

Due to our early engagement with the client, we were able to design, manufacture and supply to the project specific requirements, offshore requirements, and IMO standards.

The Bow Coupling area is a particularly hazardous part of the vessels, our MARRS® (Multi-Angle Rapid Railing Systems) handrails are ABS approved and up to the stringent NORSOK standards, ensuring the safety of crew members.

Supply Details

Applications:
FRP central raised walkway and bow coupling access

Design specifications:
IMO Standard, DNV T.A.

Quantity

- 750m approx. MARRS® and FRP Phenolic Handrails
- FRP Phenolic Ladder and Safety Gates
- 10 No. FRP Phenolic Staircases

Time frame

- 2021/2022

CapEx Benefits

- Low weight, typically ⅔ weight saving over steel
- Fast installation
- High strength
- Meets offshore fire reaction requirements
- 40 year design life

OpEx Benefits

- Minimal maintenance
- Excellent corrosion resistance
- Non-sparking, no earthing
- Proven durability
- Enhanced safety

We designed, fabricated, and installed a central raised walkway with our fiber-reinforced polymer (FRP) structures running the length of the vessel. This consisted of stair steps, stair steps grating, platform grating, legs, platform beams, passages from stairs to platforms and handrails. We also built the bow coupling stairs, ladders, grating and MARRS® ABS handrails.

Our corrosion resistant lightweight class approved Bondstrand™ products offer value engineered cost-effective solutions with reduced maintenance, proven structural and operational integrity, and significant overall reduction in CO_2 footprint.

Over all three vessels, we have saved a total of **50 tonnes of weight**, as our Bondstrand composite solutions are **⅔ lighter than steel**, allowing our client to operate at optimal capacity.

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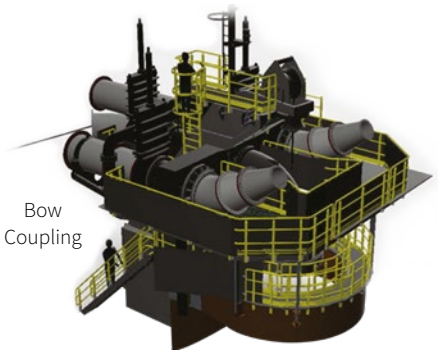

Bow
Coupling

Our FPR scope for the client includes a central raised walkway complete with FRP supports running the length of the vessel and the bow coupling stair, ladders, grating and handrail.