



Corrosion of metallic piping is a well-known problem on board seagoing vessels and offshore units. Corrosion typically occurs when metal piping is part of the seawater system, as well as in systems used in water treatment or for cleaning and degreasing.

Whether you're changing out certain sections of an existing system or adding functionality such as anti-piracy piping, ballast water treatment piping, scrubber piping, etc. we can manage the work quickly whether in port or at sea.

Traditionally, corroded piping is replaced from time to time with new pipes made of the same material. This means the defect is repaired but the problem is not solved. Future replacement of the same pipe is only a matter of time.

Leaking seawater lines are a nuisance aboard ships...especially in the engine room. Seawater spraying or dripping from leaking pipes may also result in collateral damage to surrounding equipment and instruments.

For many shipowners and operators, the exchange of piping is regarded as part of the daily routine. The time it takes for corrosion problems to begin can be predicted based on experience and often is accepted as a fact of life, with systems being repaired and replaced frequently.

The question to ask is, Do you have to accept repeated pipe replacement due to corrosion problems in your seawater piping? The answer is: No. Corrosion problems can be eliminated with Bondstrand™.

Go to [www.nov.com/fgspipe/GSN](http://www.nov.com/fgspipe/GSN) for more information.

## SOLUTIONS

NOV Fiber Glass Systems offers the solution to your corrosion problems aboard ships and offshore units. Bondstrand GRE pipe systems have a number of significant advantages when compared to steel or other metallic piping.

Bondstrand GRE pipe systems are extremely resistant to corrosion from salt water and to a wide range of chemicals. Also, there is very little scaling or fouling that will occur, avoiding pressure loss. Bondstrand GRE pipe systems are easy to install, lightweight and require no “hot work.” Bondstrand GRE pipe also can be designed to operate at temperatures up to 121C/250F.

Since 1957, Bondstrand GRE piping systems have been installed successfully and proven their performance on thousands of ships and offshore units all over the world.

The International Maritime Organization (IMO) recognizes the increasing interest to use materials other than steel for pipes on ships. In 1993, IMO developed guidelines (Res. A.753 [18]) to provide acceptance criteria for plastic materials in piping systems.

Major certifying bodies such as Lloyd’s Register, Bureau Veritas, DNV-GL, American Bureau of Shipping, RINA, RMRS and others have adopted and implemented the IMO Guidelines in their respective Rules and Regulations for the Classification of Ships. Bondstrand GRE pipe systems that are used in the marine/offshore industry are Type Approved by all major certifying bodies.

Bondstrand GRE piping systems include easy-to-install standard filament wound fittings. When standard fittings cannot be used, laminated fittings and spools can be tailor-made to fit almost any system. Replacement can take place at sea during the voyage, at anchorage, during regular loading and discharge operations or during dry dock periods.

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## Wide Range of Applications:

- Air and equipment cooling water
- Ballast/segregated ballast
- Brine
- Chlorinated systems
- Crude oil washing
- Deck hot air drying (cargo tanks)
- Drainage/sanitary service/sewage
- Eductor systems
- Electrical conduit
- Exhaust piping
- Fire mains and sprinkler systems
- Fresh and salt water systems
- Inert gas effluent
- Main engine cooling
- Petroleum cargo lines (cargo tanks)
- Discharge lines
- Scrubbers
- Steam condensate
- Tank cleaning (salt water system)