

# Belzona Protection of a Cooling Water Seawater Line in a Saudi Arabian Power Plant

ID: 10093

Industry: Power  
 Application: VPF-Valves, Pipes and Fittings  
 Substrate: Carbon steel  
 Products: Belzona 1311 (Ceramic R-Metal), Belzona 1321 (Ceramic S-Metal), Belzona 5811 (Immersion Grade)

Customer Location: Saudi Arabia  
 Application Date: March 2023

## Problem

The seawater piping in the power plant exhibited significant internal degradation, characterized by corrosion, erosion, and substantial metal loss. In addition to the internal damage, the piping was also subjected to external corrosion due to persistent moisture exposure at its installation location.



General overview of the seawater spools.



The spools were abrasive grit blasted, and the welds and areas of significant metal loss were built up and faired using Belzona 1311 (Ceramic R-Metal).



Application of Belzona 1321 (Ceramic S-Metal), an erosion-corrosion resistant lining, applied internally.



Application of Belzona 5811 (Immersion Grade) system applied externally.

## Application Situation

The seawater piping is part of the cooling water system, responsible for transporting seawater to heat exchangers and condensers to maintain efficient plant operation. Continuous exposure to seawater containing high chloride content, leading to aggressive internal corrosion and erosion. External environment characterized by high humidity and salt-laden air, causing external corrosion on unprotected surfaces.

## Application Method

1. To restore and protect the piping, the surfaces were first prepared by grit blasting and cleaning to achieve the required standard of cleanliness and roughness, followed by thorough degreasing to ensure they were free from contaminants.
2. Belzona 1311 (Ceramic R-Metal) was then applied to rebuild and restore areas where significant metal loss had occurred, reinstating the original profile and structural integrity.
3. Once the rebuilding was complete, 1321 (Ceramic S-Metal) was applied as an internal lining to provide long-term resistance against seawater corrosion and erosion, ensuring durability under continuous flow conditions.
4. For external protection, Belzona 5811 (Immersion Grade) was applied in two coats to create a moisture-resistant barrier capable of withstanding the harsh marine atmosphere.

For more examples of Belzona Know - How In Action, please visit <https://khia.belzona.com>

ISO 9001:2015  
 FS 695214  
 ISO 14001:2015  
 EMS 695213

Belzona products are  
 manufactured under an ISO  
 9000 Registered Quality  
 Management System.

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## Belzona Facts

Belzona solutions, delivering clear cost savings by avoiding expensive pipe replacement and minimizing downtime. Conventional alternatives such as welding or standard coatings were less practical and less durable in the harsh seawater environment.

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