

PIPELINE LEAKAGE ARREST AND REINFORCEMENT USING BELZONA COMPOSITE SYSTEMS

ID: 10247



PROBLEM

Our esteemed customer required the restoration of metal loss in the splash zone of a cooling tower riser pipe, which had been damaged due to continuous operation in a harsh environment. The soil-to-air interface was the most heavily affected area, with surface deterioration spreading to other parts of the pipe and making continued operation impossible. Various clamping techniques had been used to stem the leakages, but these were unsuccessful.

APPLICATION SITUATION

The riser pipe transports chlorinated process water from the plant to the cooling tower for treatment and circulation. Due to existing leakage and the tropical climate, water accumulated around the pipeline at the soil-to-air interface, creating a corrosive environment. Over time, this led to external corrosion and a reduction in asset integrity. The damage gradually spread to other sections of the pipe, making continued plant operation increasingly difficult and raising the risk of further leakage or failure.

APPLICATION METHOD

The surface had previously been filled with bitumen; however, this was penetrated by algae and bacteria, while prolonged UV exposure further affected the pipeline, as bitumen is not UV tolerant. To address the issue, the repair was carried out in accordance with Belzona Know-How Leaflets VPF-1 and VPF-11.

1. The surface was cleaned, then grit blasted.
2. Then, after careful observation and dimensional inspection, the holed areas were plate-bonded with MS plate and Belzona 1161 (Super UW-Metal).
3. The other dimensionally compromised areas were rebuilt with Belzona 1161 (Super UW-Metal).
4. Then, the composite repair system, comprising Belzona 5841 and Belzona 9371 Glass Fibre Reinforcement Sheet, was then applied to help restore the pipe's surface profile, improve external protection, and reinforce the affected area against further environmental and bacterial deterioration.

BELZONA FACTS

The Belzona application was carried out during a scheduled plant shutdown. All areas were inspected, and the damaged sections were rebuilt using Belzona 1161 (Super UW-Metal). The through-wall defects were repaired by plate bonding, after which the complete pipeline was reinforced using a composite repair system comprising Belzona 5841 and Belzona 9371. The proposal was well received by the client, who approved the repair of 12 riser pipes. Following the successful application, the client expressed interest in carrying out similar repairs on other units within the plant.

INDUSTRY

Power

LOCATION

India

APPLICATION DATE

December 2025

PRODUCTS

Belzona 1161 (Super UW-Metal)
Belzona 5841

SUBSTRATE

Carbon steel

PHOTOS

1. From ground level to a height of approximately 1.5 m, the riser pipe had deteriorated due to the presence of algae and bacteria below ground level. The section in question had previously been wrapped with bitumen in an attempt to provide protection.
2. Surface was prepared with copper slag grit blasting.
3. Belzona 1161 (Super UW-Metal) applied to rebuild damaged portion followed by plate bonding
4. Finally, the affected areas were reinforced with Belzona 5841 and Belzona 9371 composite repair system