

Chiller Internal Rebuild and Protection with Belzona 1121 & 1321

ID: 10117

Industry: Heating, Ventilation & Air Conditioning

Application: HEX-Heat Exchangers

Substrate: Carbon steel

Products: Belzona 1121 (Super XL-Metal), Belzona 1321 (Ceramic S-Metal)

Customer Location: Orlando, Florida – Universal Studios

Application Date: December 2025

Problem

The customer identified severe internal corrosion on the YORK MaxE chiller, including damaged tube sheets, heavily deteriorated end covers, and significant metal loss inside the diffuser and water box areas. The corrosion was affecting the chiller's thermal efficiency and posed a risk of leakage and premature failure. The customer needed a reliable rebuilding and protective solution to restore the equipment and extend its operational life without replacing major components.



Severe corrosion present on the tube sheet of the YORK MaxE chiller, showing metal loss, scaling, and deterioration around the tube openings prior to surface preparation.



Internal corrosion inside the diffuser and water box area of the YORK MaxE chiller, showing severe rusting, pitting, and metal degradation before blasting and rebuilding.



Diffuser section after surface preparation, rebuilding, and full application of Belzona 1321, providing a smooth, durable erosion- and corrosion-resistant lining.



Tube sheet restored with Belzona 1121 for rebuilding and fully coated with Belzona 1321 to provide long-term protection against corrosion and erosion. Surface restored to a smooth, uniform finish ready for reassembly.

Application Situation

The customer needed a fast, cost-effective alternative to replacing major components of the YORK MaxE chiller. The internal

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ISO 9001:2015

FS 695214

ISO 14001:2015

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corrosion on the tube sheet, diffuser, and end covers was causing performance loss and risk of failure, but full replacement would require extended downtime and significant capital expense.

Using Belzona 1121 and 1321 allowed the contractor to rebuild lost metal, restore structural integrity, and apply a high-performance corrosion-resistant lining directly on-site. This solution minimized equipment downtime, avoided costly part replacement, and extended the operational life of the chiller at a fraction of the cost of new components.

Application Method

The surfaces were prepared by abrasive blasting to SSPC-SP10 (Near White Metal), achieving a clean profile suitable for Belzona adhesion. Dust and contaminants were removed using clean, dry air.

Belzona 1121 was then applied by hand using applicators and spatulas to rebuild areas of metal loss on the tube sheet and end cover. The material was worked into the substrate to ensure full wet-out and restored geometry.

Once curing allowed, Belzona 1321 was applied in two coats using brushes and smoothers to create a uniform, corrosion-resistant lining on the diffuser, water box, and rebuilt areas. Wet film thickness checks were performed throughout the process to ensure correct coverage.

All work was completed on-site using standard blasting equipment, air dryers, mixing tools, and Belzona-approved application tools.

Belzona Facts

Belzona provided a cost-effective alternative to replacing damaged chiller components. The use of Belzona 1121 and 1321 allowed on-site rebuilding and long-term corrosion protection, reducing downtime, eliminating machining requirements, and extending the service life of the YORK MaxE chiller..

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