

Steel Mill Sluice Repair by Belzona Composite Repair System in New Zealand

ID: 10081

Industry: Steel & Metal Processing
Application: SHM-Solids Handling Machinery

Customer Location: Glenbrook, New Zealand
Application Date: November 2025

Substrate: Concrete
Products: Belzona 1321 (Ceramic S-Metal), Belzona 1812 (Ceramic Carbide FP), Belzona 4151 (Magma-Quartz Resin)

Problem

The sluice is located directly beneath the conveyor along which the steel slab moves as it leaves the ovens during hot rolling. During this process, impurities known as beards flake off and fall into the sluice, where they are carried away. These beards, along with smaller particulates, are extremely abrasive and gradually wear grooves into the sluice walls. These grooves trap the beards, creating dams that block the flow.

Removing these dams manually with pitchforks is both dangerous and time-consuming. Belzona's Authorized Distributor in New Zealand, Reptech Corporation, was tasked with providing an abrasion-resistant lining capable of withstanding the aggressive service conditions and preventing the buildup of beards.



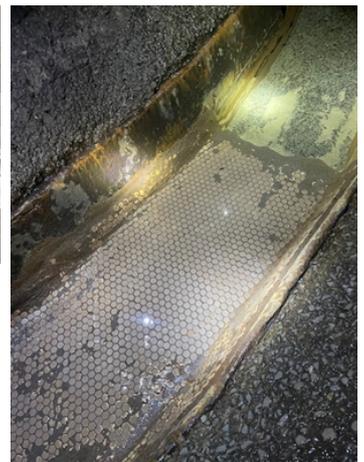
The condition of the concrete after the sluice had been drained and cleared of beards and grit.



The channel was rebuilt using Belzona 4151 (Magma Quartz Resins) and locally sourced fine quartz sand and then lined with alumina tiles using Belzona 1321 (Ceramic S-Metal) as the adhesive.



Once the Belzona 1321 (Ceramic S-Metal) had cured, the fabric backing was removed, and the area was frost-blasted in preparation for grouting with Belzona 1812 (Ceramic Carbide FP).



The Belzona system exhibits virtually no wear after 3 months of service in this particularly aggressive environment and the customer has now asked us to complete an additional 20 meters of sluice for them.

Application Situation

The sluice would become blocked on a weekly basis, causing flooding in the tunnel. The only way to remove the dams was to

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manually break them apart, which was both unsafe and time-consuming.

Application Method

1. The channel was dammed off, drained, and cleared of all debris. Five lineal meters were then grit-blasted in preparation for the application.
2. Belzona 4151 (Magma-Quartz Resin) was mixed with quartz sand in a resin-rich mixture and applied to the channel to restore its original geometry and create a smooth surface for the alumina tile system.
3. Belzona 1321 (Ceramic S-Metal) was selected as the adhesive and applied to an average wet film thickness of 1000 microns.
4. The tile sheets were pressed into the Belzona 1321 until the entire 5-meter length was filled.
5. Once cured, the fabric backing and any loose tiles were removed. The area was then frost-blasted and cleaned with compressed air.
6. Belzona 1812 (Ceramic Carbide FP) was applied as a grout and used to create transitional areas between the tile sheets and the channel to prevent future beards from jamming or cutting under the tiles.

Belzona Facts

The client had attempted numerous repairs on the sluice, most notably using a custom-made Hardox insert along the full length of the channel. This solution was costly and ultimately ineffective. The Belzona system was selected because it provided a durable, in-situ, abrasion-resistant solution.

After three months of service, the Belzona repair system has shown virtually no signs of wear. The client has subsequently approved extension of the lining to an additional 20 meters of sluice.

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