

# Repair and Protection of Fixed Cone Free Valve for Hydropower Plant

ID: 9113

**Industry:** Power  
**Application:** VPF-Valves, Pipes and Fittings  
**Substrate:** Carbon steel  
**Products:** Belzona 1111 (Super Metal), Belzona 1341N (Supermetalgilde)

**Customer Location:** Miraflores, Antioquia, Colombia  
**Application Date:** August 2017

## Problem

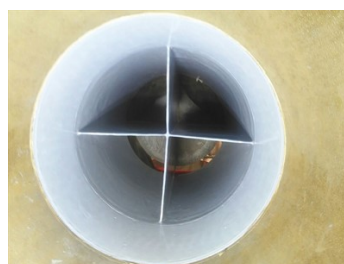
A Howell Bunger Free Discharge valve is commonly used for handling high flow rates from dams and reservoirs. The valve was inspected identifying severe corrosion, erosion, and wall thickness loss of the internal flow dividing walls; specifically at the fixed cone, valve's body, and shutter.



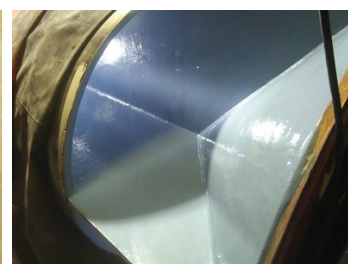
Damages to the valve's body.



Belzona 1111 used to repair and rebuild the valve's body.



First coat of Belzona 1341N applied to the valve's body.



First coat of Belzona 1341N applied to the fixed cone.

## Application Situation

Some challenges encountered included working at high altitudes and in confined spaces as well as using electric wind heaters to optimize the temperature in the application of the Belzona products. The Belzona application provided excellent resistance against erosion and corrosion, extending the life of the equipment beyond the client's expectation.

## Application Method

- Surface preparation was performed by sandblasting the fixed cone, valve's body and shutter.
- The substrate's profile was measured, resulting in 3.4 mils.
- Belzona 1111 was applied to rebuild the worn areas.
- A first coat of Belzona 1341N (grey color) was applied to the fixed cone, valve's body, and shutter as per the Instructions for Use, and the wet film thickness was checked.
- A second coat of Belzona 1341N (blue color) was applied to the fixed cone, valve's body, and shutter as per the Instructions for Use, and the wet film thickness was checked.

## Belzona Facts

The Howell Bunger Free Discharge valve was repaired and protected to last 3 years until replacement. It was later inspected in February 2022, identifying a small crack which was repaired and as a result, the equipment is currently in operation.

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

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