

# Rebuild and Protection of Discharge Elbows on a Francis Turbine

ID: 9047

**Industry:** Power  
**Application:** VPF-Valves, Pipes and Fittings  
**Substrate:** Cast Iron  
**Products:** Belzona 1311 (Ceramic R-Metal), Belzona 1331, Belzona 1341 (Supermetalgilde), Belzona 2141 (ACR-Fluid Elastomer)

**Customer Location:** Hautes-Alpes  
**Application Date:** September 2022

## Problem

The discharge elbows of Francis turbines suffered severe cavitation-erosion in the inferior areas.



Damage caused by erosion-cavitation leading to a substrate loss greater than 5mm.



All elbows viewed together.



Post substrate rebuilding, the first coat of Belzona 1341 and Belzona 2141.



Final application showcasing Belzona 1341 and Belzona 2141.

## Application Situation

Francis turbine elbows within a Hydroelectric Power Station.

## Application Method

The areas affected by cavitation were reloaded using Belzona 1311. All elbows were then coated using Belzona 1331 or Belzona 1341. The most cavitation-intense zones were then further top coated using Belzona 2141 (an Anti-Cavitation Resistant Elastomer). The application was carried out in accordance with Belzona System Leaflet VPF-01 & VPF-02.

## Belzona Facts

The customer wanted to negate having to replace the elbows - this would have to be every 10-years. By using Belzona solutions, we can perpetually rebuild and protect them over time.

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

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