

# BELZONA REPAIRS BROKEN HYDRO ELECTRIC TURBINE RUNNER

ID: 4674

Industry: *Power*

Customer Location: *Hydro Electric Plant, USA*

Application: *CEP-Centrifugal Pumps*

Application Date: *May, 2007*

Substrate: *Cast steel*

Products: *\* Belzona® 1311 (Ceramic R-Metal) Belzona® 1321 (Ceramic S-Metal) Belzona® 1341 (Supermetalgilde) ,*

## Problem

*Loss of balance and horsepower.*



## Photograph Descriptions

\* Broken runner blade Expanded metal tack welded Blades rebuilt with Belzona® 1311 Completed application after coating runner ,

## Application Situation

Wicket gate came loose and fell into turbine breaking three blades on runner.

## Application Method

Application was carried out in accordance with the Belzona Know-How System Leaflets CEP-1 & CEP-3. Expanded metal was tack welded in place before rebuilding with Belzona® 1311. Complete runner was coated with Belzona® 1311 and Belzona® 1341 was applied on top to improve fluid flow efficiency.

## Belzona Facts

The efficiency gain was so profound, that the customer was able to reduce the water setting from 70% to 62% without changing the power output from the runner, maintaining the 500 kW output. Using less water, the water behind the dam lasts longer, keeps the turbine running longer, resulting in increased revenue across a year. Belzona solution cost 9.2% of the conventional replacement by repairing the turbine instead of tearing it down and sending it out to be repaired. While the conventional repair would take 10 weeks of downtime, Belzona refurbishment took 2 weeks. The customer's payback period on this repair was 3 months. Three years later and the turbines still have good horsepower with the runner blades still intact.

For more examples of Belzona Know - How In Action, please visit <https://khia.belzona.com>

ISO 9001:2015

Belzona products are

FS 695214

manufactured under an ISO

ISO 14001:2015

9000 Registered Quality

EMS 695213

Management System.

[www.belzona.com](http://www.belzona.com)

  
**BELZONA**  
 Repair • Protect • Improve