

# Belzona Repairs and Protects Francis Turbine

ID: 8706

**Industry:** Power  
**Application:** CEP-Centrifugal Pumps  
**Substrate:** Stainless Steel  
**Products:** \* Belzona 9111 (Cleaner Degreaser) ,  
\* Belzona 1311 (Ceramic R-Metal) ,  
\* Belzona 1341 (Supermetalgilde) ,  
\* Belzona 2141 (ACR-Fluid Elastomer) ,  
\* Belzona 2941 (Elastomer SP-Conditioner) ,

**Customer Location:** Hydroelectric Power Plant, Turkey  
**Application Date:** December 2021

## Problem

Over time, the turbine had suffered from serious erosion, cavitation and several parts of the vanes had deteriorated due to foreign matter entrained within the process. During an inspection, severe pitting was identified in the draft tube area.



## Photograph Descriptions

- \* 1.) Rebuilt damaged vanes with perforated sheet ,
- \* 2.) Cavitated vane tips repaired with Belzona 1311 ,
- \* 3.) 1st coat of Belzona 1341 ,
- \* 4.) Final application ,

## Application Situation

Restoration of a 91Mw francis turbine within an Hydroelectric power plant.

## Application Method

This application was carried out in accordance with modified system leaflets CEP-01, CEP-05 & CEP-10.

First, the turbine was grit blasted to SA2.5, achieving a surface profile of 75 microns before being cleaned with Belzona 9111. Once

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

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the surface was clean & dry, any severely pitted areas or damaged vanes were rebuilt with Belzona 1311 along with perforated metal sheets, restoring the turbine back to its original dimensions. After the 1311 had cured, the surface was frost blasted (40 microns) before applying 2 coats of Belzona 1341. Finally Belzona 2941 conditioner and Belzona 2941 were applied to the tips of the turbine vanes as these areas were most susceptible to cavitation.

## Belzona Facts

The Belzona system was chosen as Belzona 1341 offered efficiency enhancement properties, combined with the anti-cavitation properties of Belzona 2141. The client expressed their happiness with the quality of the Belzona repair once complete and in operation.

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