

# Restoration of Turbine Stay Ring and Vanes with Belzona

ID: 8705

**Industry:** Power  
**Application:** CEP-Centrifugal Pumps  
**Substrate:** Steel  
**Products:** \* Belzona 9111 (Cleaner Degreaser) ,  
\* Belzona 1311 (Ceramic R-Metal) ,  
\* Belzona 1321 (Ceramic S-Metal) ,  
\* Belzona 1341 (Supermetalglide) ,  
\* Belzona 2941 (Elastomer SP-Conditioner) ,  
\* Belzona 2141 (ACR-Fluid Elastomer) ,

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

## Problem

After 10 years of operation, the stay ring and vanes had lost thickness due to erosion. During a routine inspection, the surfaces had also been identified as being rough, resulting in a loss of efficiency and an increase in power consumption. The cause of roughness on the stay ring and vanes was because of foreign matter (sand, silt, mud etc.) within the process.



## Photograph Descriptions

- \* 1.) Damaged stay ring prior to application ,
- \* 2.) The fixed wings before the application ,
- \* 3.) The stay ring after the application ,
- \* 4.) Final application - Belzona 1341 + Belzona 2141 ,

## Application Situation

Repair of the stay rings and draft tube of a 140Mw turbine operating within a hydroelectric power plant.

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ISO 9001:2015  
FS 695214  
ISO 14001:2015  
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## 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 the surface was clean & dry, the pitted stay ring, vanes and draft tube were rebuilt with Belzona 1311, restoring the equipment back to its original dimensions. After the Belzona 1311 had cured, the surface was frost blasted (40 microns) before applying Belzona 1321 to the draft tube and Belzona 1341 to stay ring and vanes. Finally Belzona 2941 & Belzona 2141 were applied to the tips of the stay vanes for their anti-cavitation properties.

## Belzona Facts

These 2 turbines had been in operation for 10 years, previous coatings had been applied with limited success. The customer was extremely happy with the performance benefits of the Belzona system by being able to increase the efficiency of the equipment with less power consumption.

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