

## BELZONA REPAIRS AND PROTECTS HYDROELECTRIC TURBINE AND CASING

### CUSTOMER

Major European electricity operator, Aguieira, Portugal

### APPLICATION DATE

May 2010

### APPLICATION SITUATION

Hydroelectric pumped storage turbine and casing

### PROBLEM

Both turbine and casing suffered from severe erosion corrosion when operating in both pumped storage and electricity generation mode.

### PRODUCTS

Belzona® 1111 (Super Metal)

Belzona® 1321 (Ceramic S-Metal)

Belzona® 1812 (Ceramic Carbide FP)

Belzona® 2141 (ACR-Fluid Elastomer)

### SUBSTRATE

Carbon Steel

### APPLICATION METHOD

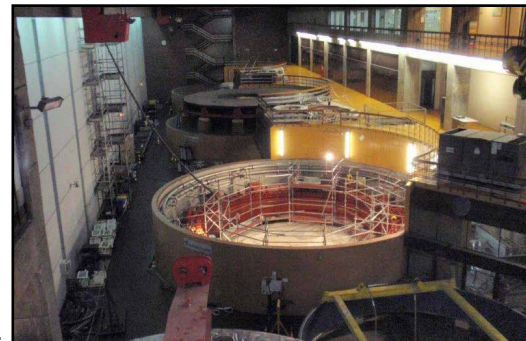
Application was carried out in accordance with Belzona Know-How System Leaflets CEP-3, CEP-5 & SHM-11. The application was carried out on a platform built on the ground floor, which provided more space and a more controlled application environment. Belzona® 1321 was applied to protect from future erosion corrosion damage. Within localised problem areas, a number of different systems were used. Belzona® 1812 was applied to the stay vanes' leading edges for protection from entrainment erosion in pumping mode, and Belzona® 2141 on the stay vanes' leading edges in turbine mode to protect from cavitation with Belzona® 1341 being used in the middle section.

### BELZONA FACTS

Thanks to the use of various Belzona systems in localised areas, a number of different problems could be addressed, demonstrating the versatility of Belzona products. Inspection in June 2012 showed all application areas to be in excellent condition with no evidence of corrosion or erosion on the different application areas.

### PICTURES

1. Turbine disassembly
2. Pit filling on the turbine with Belzona® 1111
3. Application of Belzona® 1812 after coating the entire stay vane with Belzona® 1341
4. Completed application of Belzona® 2141



1.



2.



3.



4.

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



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