

TURBINE COMPONENTS REPAIRED WITH BELZONA

ID: 10327



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PROBLEM

The turbine components of a small hydroelectric power plant showed surface damage caused by wear, erosion, cavitation, and local material loss. The affected parts included the runner and shaft, guide vanes, wear rings, turbine cover, and regulating ring. These damaged surfaces could negatively affect flow efficiency and lead to increased wear and higher maintenance costs. The aim of the repair was to restore the original surface profile and improve resistance to the operating conditions encountered within the hydroelectric system.

APPLICATION SITUATION

As part of a scheduled maintenance programme at a hydroelectric power plant, a repair strategy was developed for several hydraulically stressed turbine components following a detailed technical inspection. Preparation work, including cleaning, abrasive blasting, and local welding and levelling, was carried out by the operator.

By using Belzona repair and coating systems, a major replacement of the components could be avoided. This reduced material consumption, labour requirements, and overall downtime. The refurbishment was carried out in a workshop environment under controlled conditions, allowing the damaged components to be restored efficiently and to a high standard.

APPLICATION METHOD

After an initial abrasive blast, all repair areas were prepared to a surface profile of 80 to 130 microns and a cleanliness standard of SA 2.5. Areas affected by wear and surface pitting were rebuilt with Belzona 1311 and smoothed through intermediate grinding stages. The wear rings and runner clearances were then coated with Belzona 1331 to restore and adjust the required clearances.

The water-facing surfaces of the runner, shaft, and guide vanes were coated with Belzona 1341 to provide long-term protection against erosion and wear. For the internal and external surfaces of the turbine covers, as well as the regulating ring, Belzona 5821 was applied as a protective coating.

BELZONA FACTS

The Belzona systems used allowed the existing components to be repaired and rebuilt rather than replaced at significant cost. This approach eliminated the need for complete renewal of the turbine components, reducing manufacturing, logistics, and installation requirements.

In addition, the protective coatings help minimise erosion, cavitation, and flow-related wear. This supports longer maintenance intervals and can significantly extend the service life of the components, helping to reduce long-term operating and maintenance costs.

INDUSTRY

Power

LOCATION

Austria

APPLICATION DATE

June 2026

PRODUCTS

Belzona 1311 (Ceramic R-Metal)

Belzona 1331

Belzona 1341 (Supermetalgilde)

Belzona 5821

SUBSTRATE

Other

PHOTOS

1. Damaged turbine components
2. Turbine components after surface preparation
3. Damage repaired and smoothed with Belzona 1311
4. The fully repaired and coated turbine components.

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