Belzona repairs historic Francis turbine for hydroelectric plant

ID: 10364

Industry:	*Power*	Customer Location:	*Glenrothes*
Application:	*CEP-Centrifugal Pumps*	Application Date:	*July 2026*
Substrate:	*Cast Iron*		
Products:	*Belzona 1311 (Ceramic R-Metal),Belzona 1341 (Supermetalglide)*		

Problem

A historic Francis turbine runner at a hydroelectric facility had suffered significant erosion and corrosion, resulting in profile loss across the runner blades and upper crown. The deterioration risked reducing hydraulic efficiency, impacting overall performance and long-term reliability. A solution was offered to restore and improve hydraulic efficiency.



A historic francis turbine required repair and enhanced protection against abrasive wear



Belzona 1311 restored the blade profiles back to original OEM geometry



Two coats of Belzona 1341 (Supermetalglide) was applied to all areas



The runner gains a smoother surface and improved hydraulic efficiency

Application Situation

The client commissioned the refurbishment of the turbine runner as part of a wider restoration project. The objective was to restore the original hydraulic profile back to original OEM geometry, wherever practical and enhance operational efficiency through the application of a high-performance fluid flow coating.

Application Method

The turbine runner and shaft were transported to Belzona UK's workshop for inspection and refurbishment. Following assessment, the component underwent abrasive grit blasting to achieve a minimum 75 µm profile and Sa 2½ cleanliness standard.

A salt decontamination process was then completed to remove soluble contaminants, followed by a secondary abrasive blast to reinstate the required surface condition prior to coating.

Areas affected by corrosion and metal loss were rebuilt using Belzona 1311 (Ceramic R-Metal), restoring the runner profile and repairing heavily damaged blade sections and wear to the upper crown. Multiple applications were utilised where necessary to achieve the required geometry.

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FS 695214
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Upon completion of the restoration works, two coats of Belzona 1341 (Supermetalglide) were applied to all specified surfaces at 250 µm DFT per coat, providing a total nominal coating thickness of 500 µm. Final inspections were completed before release of the component for collection.

Belzona Facts

The application restored the turbine runner profile and repaired erosion-corrosion damage, which enhanced resistance to future erosion and corrosion.
Reduced hydraulic surface roughness through the application of Belzona 1341 and improved fluid flow characteristics to help maximise turbine efficiency.
Potable water approved coating suitable for long-term immersion service.
Extended asset life and reduced future maintenance requirement.

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