

Belzona Trials New SF6 Leak Solution

ID: 9332

Industry: Power
Application: GSS-Gaskets, Seals and Shims
Substrate: Aluminum
Products: Belzona 1981 (SuperWrap II), Belzona 7311

Customer Location: Lackenby, Cleveland
Application Date: November 2023

Problem

SF6 is a gas which is used throughout the electricity industry as an insulating medium in switchgear. It provides many tangible benefits, however it is a potent greenhouse gas with a high global warming potential (GWP). At more than 23,000x more aggressive to the atmosphere than carbon dioxide (CO2), therefore, losses are accounted for. Environmental agencies' who control SF6 losses can then issue fines for these losses. This particular Electrical Switch Gear was leaking a sizable amount of SF6 which is why the Customer needed a solution to reduce the leak.



SF6 flange following surface preparation to SSPC-SP11, installation of the Backing Rod, tape, Redirection Nozzle & Breather Membrane.



Wetting out of the Breather Membrane and vertical application of Reinforcement Sheets (Belzona 9341) using Belzona 7311.



Post-application of 5x wraps of reinforcement sheet (Belzona 9371) and Belzona 1981 resin.



Final application after a further encapsulating layer of Belzona 7311.

Application Situation

Electric Switch Gear flange within a Power Distribution Substation.

Application Method

The substrate (Aluminium) was first prepared in accordance with SSPC-SP11 Surface Preparation using an MBX (using a Stainless Steel wheel to prevent bi-metallic contamination). Once prepared, a backing-rod was applied behind the flange bolts and tape was applied over the bolts themselves (this prevents Belzona from adhering to them and allows a smoother surface transition). A Breather Membrane was applied around the circumference of the flange encapsulating it in its entirety, a Redirection Nozzle was also fitted to channel the leaking gas. Belzona 7311 was then applied to seal the membrane prior to the application of the impregnated Belzona 9341 (Reinforcement Sheet). The newly applied Belzona 7311 was then wetted out using Belzona 1981 (Winter Grade) SWII Resin prior to the application of 5 x wraps of Belzona 9371 (SWI Reinforcement Sheet) forming 10-layers (due to the 50% overlap). This was then left to polymerise (generating a slight self-curing exotherm) prior to a final encapsulating layer of Belzona 7311. The application required approximately 6L of Belzona 7311 & 5L of Belzona 1981. The application was carried out in accordance with a modified version of Belzona System Leaflet VPF-12.

Belzona Facts

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

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Belzona conducted this application on a trial basis and had to reduce the leak by a minimum of 80%. The application was undertaken within a 12-hour shift.

The solution was classed as successful after 3-months of service and is now being rolled out at other national substations across the UK

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