Bond, Cold Bond: Securing Heavy Loads on a Live Asset

ID: 10407

Industry:	*Chemical & Petrochemical*	Customer Location:	*Scotland, UK*
Application:	*TCC-Tanks and Chemical Containment Areas*	Application Date:	*February 2026*
Substrate:	*Carbon steel*		
Products:	*Belzona 7311*		

Problem

Hot work restrictions severely prohibited any welding, open flame, or high-temperature spark generation directly on top of a live butane storage tank. Traditional mechanical fastening was completely unviable because there was insufficient physical clearance and space to drill and bolt brackets into place. Furthermore, any alternative workaround lacked the structural capacity required to hold the heavy support brackets and the extensive insulation hung beneath the tank safely.



Roof where brackets were to be installed



Close up showing insufficient space for bolting



Bracket bonded & clamped in place



Bracket cured using heat blankets & adhesion testing carried out

Application Situation

Rigorous engineering calculations and data packages were required prior to execution to ensure the bonding product could safely sustain the hardware under the continuous dead weight and load of the insulation hanging below the tank. A cold-bonding alternative was vital to secure the brackets reliably without violating safety protocols or risking the integrity of the live asset.

Application Method

Because the butane storage tank was live and its external surface was cold, the bonding area was first carefully heated to prevent condensation and optimize substrate temperature. The surface was then grit-blasted to an ISO 8501-1 Sa 2½ standard with a 75-micron profile. The brackets were bonded in place using Belzona 7311 structural adhesive and securely clamped during the cure phase. Heat blankets were deployed to accelerate and ensure a complete cure.

Belzona Facts

Safe Cold-Bonding Execution: Eliminated the need for dangerous hot work permits on a live butane storage vessel, preventing potential plant shutdowns or explosive hazards.

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Overcame Space Restrictions: Successfully mounted structural brackets where physical spacing made drilling or conventional bolting impossible.

High-Performance Adhesive Specs: Utilized Belzona 7311, a fatigue-resistant structural epoxy adhesive optimized for high mechanical strength. It delivers exceptional pull-off adhesion (up to 37.9 MPa / 5,500 psi on mild steel) and high resistance to peel, cleavage, and cyclic fatigue loads.

Engineering-Backed Reliability: Comprehensive design data packages allowed precise engineering calculations to verify the load-bearing capability for the suspended insulation.

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