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PRESS INFORMATION

Title: Diesel Tank Repair Gives Trains a New Lease of Life
Subtitle: Cold-bonding polymeric techniques prove their advantages over welding

Over the course of two centuries, railway networks throughout the UK have changed significantly from the original public railway, to become what many of us use today. However, the vast majority of trains still charting their journey around the country have been in operation since the late 1960s or early 1970s. Therefore, with such an extensive service life, these trains continuously require repair and maintenance in order to keep them running. In fact, some have been left to rack and ruin after having been stored in sidings for up to 30 or 40 years, during which time the effects of vegetation and corrosion have taken their toll.

When left in sidings, trains are subjected to the effects of corrosion and vegetation

One particular UK-based company specialises in the restoration of dilapidated trains, salvaging them and conducting varying degrees of repair and maintenance, before repainting and returning to a like-new condition. Not only does this provide a cheaper alternative to purchasing a new train, but it also delivers a new lease of life to many of these abandoned diesel-electric freight trains.

Bottom of corroded diesel tank featuring pitting and holes

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During the refurbishment process, the company identified a recurring problem with the diesel tanks. Originally, the undersides of all diesel tanks were covered with fibreglass as a protective barrier against sparks flying up from the tracks. Critically, moisture would enter the gaps between the fibreglass and the steel tank, causing corrosion of the metal; in some instances this appeared as pitting or even holes. Their present repair method comprised of grit blasting the fibreglass away from the diesel tanks and welding steel plates over the weakened areas. However, subsequent pressure testing revealed that welding was causing further cracks or weaknesses in the steel around the various HAZ (heat-affected zones). These weaknesses were compounded further by additional weld repairs and numerous pressure tests, before the company was satisfied with the final outcome. This proved to be both time consuming and expensive.

Therefore, the company chose an alternative repair method, using a cold-applied solution to cold-bond a metal plate over these defects. This ensured that further damage from hot work did not compromise and slow the repair process, removing the threat of HAZ. However, eliminating hot work was not the only advantage of using a paste-grade, epoxy-based repair material. Notably, certain cold-applied systems can provide superior benefits, such as corrosion resistance and levels of adhesion, bonding to a variety of different substrates including most common industrial metals. Fundamentally, one of the biggest advantages of a composite repair solution is that the paste-grade material acts as a barrier between the new and old metal. Compared to welding, this negates the potential for bi-metallic corrosion, assuring the integrity of the metal tank.

Diesel tank restored using a cold-applied solution

Following the cold-bonding, the tank was subsequently pressure testing and significantly passed first time, restoring the diesel tanks to full working condition. Finally, the repair was coated with GRP (Glass-fibre Reinforced Plastics) and painted black, in line with the remainder of the tank. Significantly, the customer was satisfied with the speed of the process in comparison to their traditional repair method. This allowed the repaired tanks to be refitted onto the trains far quicker, whilst also offering a long-term solution for their initial problem. This cold-applied solution has since been incorporated into their authorised specification for all diesel tank repairs and is now a company approved repair method.

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Repaired diesel tank fitted onto refurbished train

Polymeric cold bonding techniques, such as these, have been used throughout industry, completing applications in environments from mining to oil and gas. Regardless of the type of machinery and equipment or buildings and structures, polymeric materials have provided countless solutions, with proven results.

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Notes to Editor;

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- High resolution images, if not supplied with the email, are available on request.
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