

Case Study: Eliminating corrosion of antennas on locomotive rooftops benefits operating and capital budgets

SITUATION OVERVIEW

A North American Transit system recognized corrosion problems with antennas on the rooftops of their locomotives used for commuter rail service. The aluminum bases of the antennas suffered significant corrosion that was affecting communication performance and requiring considerable maintenance manhours. It was determined that the bond sealant used around the antenna base and at each bolt head was not preventing **moisture infiltration**. In addition, corrosion was accelerated where the aluminum antennas were mounted directly against a steel body due to the **galvanic effect of dissimilar metal contact**.

The harsh environment of rail operations accelerates corrosion. Unrelenting **vibration and thermal variations** cause standard sealants to crack, de-bond and fail more quickly, thereby permitting moisture to intrude.



IMPACT OF CORROSION ON TRANSIT OPERATIONS AND BUDGETS

In this situation, corrosion caused disruption in the antenna performance, increased manpower use/costs, and required considerable unnecessary downtime for their locomotives – making these expensive company assets non-productive.

- RF transmission impairment and signal distortion
- Loss of electrical ground/bond
- EMI performance affected by corrosion
- Antenna replacement cost – product lifespan was reduced to months, rather than multiple years
- Substantial added labor cost attributable to frequent inspections and extensive maintenance time needed to repair/replace antennas
- Increased locomotive downtime



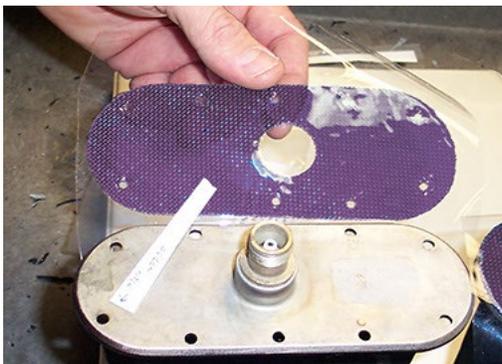
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CORRECTIVE STRATEGY USING CORRSOLVE SOLUTIONS

CorrSolve Corr-Cut gaskets RG901000-09 (for the ST321 Sinclair antenna) and RG901000-11 (for the ST221 Sinclair antenna), along with Corr-Form RS8771-50 non-hazardous sealant were recommended for corrosion prevention.

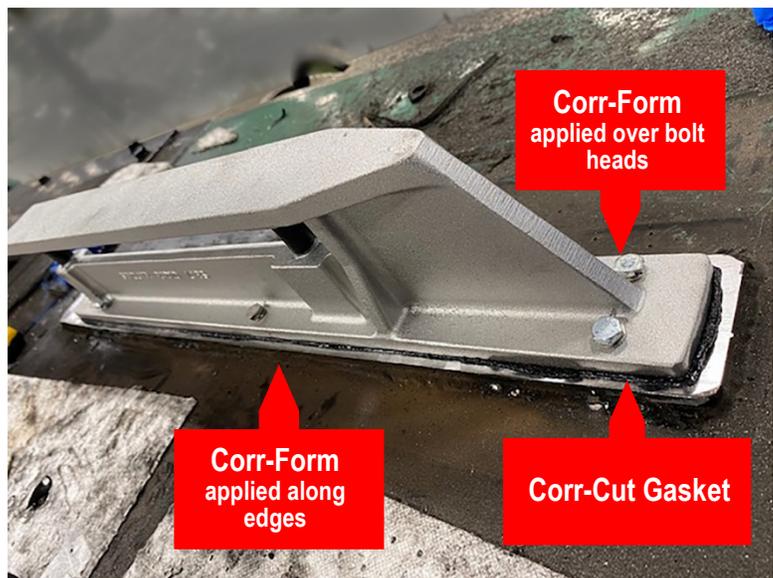
These **Corr-Cut gaskets** are die cut from conductive mesh encapsulated with a soft, tacky and pliable polyurethane sealant that compresses to fill gaps between the surfaces under the antenna. The conductive aluminum mesh carrier provides the electrical bonding needed, and the polyurethane gel protects the metal surfaces from galvanic corrosion. (CorrSolve also offers Corr-Cut gaskets made from non-conductive mesh, and without mesh.)

Corr-Form is a UV-resistant waterproofing sealant for perimeter gaps and structure edges. Corr-Form applies easily with the CorrSolve dispenser tool and cures in just one hour. As a remedy for this situation, Corr-Form was applied to cover the bolt heads and along all exposed edges to prevent moisture intrusion.



Above: Example of a Corr-Cut gasket showing the conductive mesh. Corr-Cut gaskets are die-cut for each antenna model to ensure a precise fit and easy installation.

Right: One of the antenna models described in this case study is shown installed with all recommended CorrSolve solutions.



RESULTS WITH CORRSOLVE SOLUTIONS

The CorrSolve solutions that were employed created a durable environmental seal for exceptional corrosion prevention, improved antenna reliability, reduced manhours for reactive maintenance, and reduced downtime of the railroads' locomotive assets.

CorrSolve products are specifically tailored to meet the needs and specifications of the rail industry.