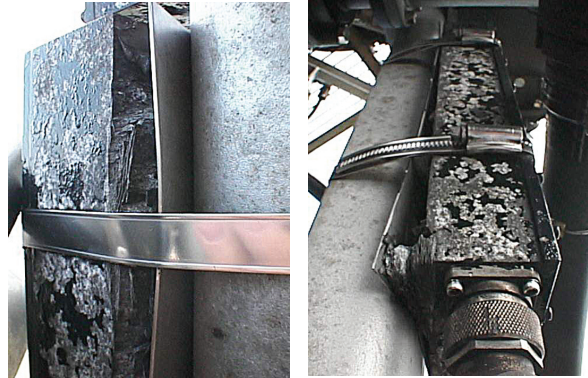


Galvanic Corrosion in Radio Towers

Galvanic corrosion is a growing problem within the GSM/UMTS industry, where increasing numbers of TMAs, diplexers, triplexers and other critical devices are being installed at the top of antenna towers. Because conditions here are normally quite tough, corrosion is likely to occur over time as a result of a number of circumstances, most notably the choice of materials.

When materials containing two or more dissimilar metals are connected together, wet conditions can give rise to micro-currents such as those found in a small battery. The flow of ions and electrons between these materials results in galvanic corrosion, a well-known source of failure with various antenna line components. Retrofits of components prone to galvanic corrosion have been known to cost millions for operators afflicted by this problem.

The diagram below shows the galvanic potentials for commonly used materials in both fresh and salt water. The greater the difference between these potentials, the likelier it is that the material with the lowest potential, i.e. the least precious metal, will corrode.



Materials having greatly differing potentials should never be connected together atop radio towers subjected to wet conditions.

This explains, for example, why aluminium risks corroding when in contact with the galvanized steel of outdoor radio towers over an extended period of time. Although several protective surface treatments are available for aluminium, we have not found any of them to provide sufficient protection against the tough conditions atop these towers year after year. Once the protective surface deteriorates, there is nothing left to protect the aluminium. In addition, external currents such as those leaking from electrical devices can heavily accelerate the process. Therefore, Teracom Components does not allow the use of aluminium with any of its products intended for outdoor use. ■

