Corrosion Degradation of Two Coating Systems Exposed for Three Years in a Tropical Oceanic Atmospheric Environment

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Two commercial coating systems applied to aluminum alloy screw connections exposed naturally in a tropical oceanic atmospheric environment were studied. The degradation process after different exposure times was analyzed by a series of test methods: visual appearance, color change, gloss loss, Surface FTIR and EIS. Our experimental results indicated that for the screw connection structure, the joint area was not only more susceptible to corrosion, but also increased the inconsistency of the flat area nearby. The protective ability of coating system 1 was superior to that of coating system 2. The effective protective time of coating system 1 was about two years, while the coating system 2 was less than one year.

Keywords: Natural Exposure Test; Coating Systems; Degradation; Protective Ability

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