COATINGS, WELDED JOINTS AND MICROBIAL COLONIZATION IN HOOP AND CONVENTIONAL SWINE HOUSING SYSTEMS

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Abstract

This study evaluates the long-term performance of protective coatings and welded joints in semicylindrical hoop and conventional swine housing structures built between 2008 and 2011 and operated for approximately 15 years, using dry film thickness measurements (ISO 2808) and coating degradation ratings (ISO 4628). Hoop buildings exhibited better preservation of protective coatings and welded joints than conventional facilities, which, characterized by higher humidity and ammonia concentrations, showed more extensive deterioration of protective layers and a greater occurrence of localized corrosion, particularly around structural assembly joints and welded areas.

A complementary microbiological investigation revealed that corroded surfaces retained higher microbial colonization than intact coated areas, with bacteria and fungi colonizing rough and porous rust layers. Housing design and microclimate therefore significantly affect coating service life and the extent of corrosion-associated microbial reservoirs on metal surfaces.

Key words: *hoop structures, swine housing, welded joints, corrosion, microbial colonization*