# Microbiologically Induced Corrosion of Stainless Steel in a Hydroelectric Power Plant

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Upon investigation of turbine blades at a hydroelectric power plant, evidence of corrosion damage in the form of pitting corrosion was identified. On-site examination of the martensitic stainless steel blades unveiled a substantial biofilm coating. Subsequent removal of the biofilm exposed numerous corrosion pits, some reaching depths of up to 3 mm. Notably, the distribution of these pits was uneven, exhibiting a cavernous morphology. Chemical analysis of the deposits within the corrosion pits highlighted a significant concentration of manganese (Mn). Remarkably, the stainless steel material exhibited no inherent metallurgical flaws. Replica samples were obtained and subjected to thorough analysis, confirming the presence of pitting corrosion. These findings collectively point to the involvement of manganese-oxidizing microorganisms as instigators of this corrosion phenomenon also called "microbiologically induced corrosion". An explanation of this phenomenon's mechanics is provided.