

CASE STUDY

DEGRADATION THREAT ASSESSMENT (DTA) FOR HYDROGEN PRODUCTION PLANT

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OVERVIEW

The hydrogen production facility processing biogas produced from the treatment of wastewater to produce hydrogen and graphite. This plant is a key step in demonstrating the scale-up and commercial potential of the hydrogen production technology to produce clean hydrogen product.

This Degradation Threat Assessment (DTA) plays a pivotal role as a prerequisite for the subsequent Qualitative Risk Assessment process and the development of the Inspection Test Plan (ITP).

SERVICES

The DTA scope of work focuses on the pressure vessels and piping circuits specifically located in the hot area in the plant. This includes an accumulation of fifteen pressure vessels and piping circuits. The scope also covers the temporary pressure vessel and piping constructed from Incoloy 800HT material, designed for less than a year before transitioning to Inconel 617 material.

OUTCOME

The assessment of degradation threats within the hot plant offers a comprehensive overview of potential deterioration scenarios expected throughout the facility's operational lifespan.

The key driver of degradation in the plant is the elevated operational temperature, particularly pronounced within the hot plant where temperatures reach to 900°C. Consequently, risks associated with temperature-driven phenomena take precedence as primary factors influencing the likelihood of failure for pressure vessels and piping in the hot area constructed from nickel-based material.

Notably, Client has proactively implemented effective measures to prevent any degradation escalation throughout the operation. These endeavours underscore Client's commitment to upholding the integrity and longevity of the plant under diverse operational conditions. Through these efforts, Client sets a significant precedent for ensuring the sustainability and reliability of the plant well into the future.