

## **A Failure Investigations of High-Temperature Hydrogen Attack at Plat Forming Unit Furnace Elbow**

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**Abstract :** High-temperature hydrogen attack (HTHA) failure is the common phenomena at elevated temperature in hydrogen environment in oil and gas field. The failure occurred once after four years at the internal surface of Platforming elbow. Both visual and microscopic examinations revealed that the failure was initiated due to blistering forming followed by large cracking at the inner surface. Crack morphology showed that the crack depth was about 50% of material wall thickness and its behavior generally was intergranular. This study concluded that the main reason led to failure due to incorrect material selection comparing to the platforming conditions.

**Keywords :** decarburization, failure, heat affected zone, morphology, partial pressure, plate form

**Conference Title :** ICMSME 2019 : International Conference on Material Science and Material Engineering

**Conference Location :** Rome, Italy

**Conference Dates :** September 17-18, 2019