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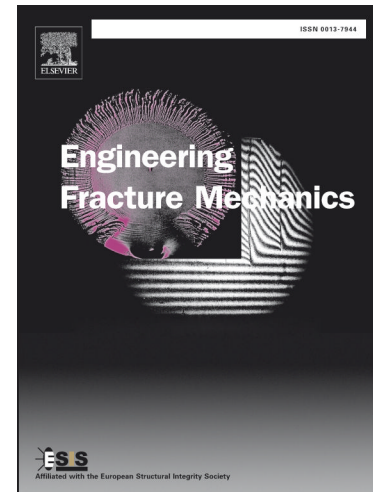
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HYDROGEN INDUCED CRACKING OF PIPELINE AND PRESSURE VESSEL STEELS: A REVIEW

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ABSTRACT

Pipelines and pressure vessels made of carbon and low alloy steel, have suffered from Hydrogen Induced Cracking (HIC) in wet hydrogen sulfide environment in oil & gas industry. Hydrogen, which is produced at cathode due to corrosion reaction, diffuse into the material and result in cracking in wet hydrogen sulfide environment. Hydrogen assisted cracking usually manifest in carbon and low alloy steels with crack initiation and propagation characteristics. Origin and morphology of cracks are dependent on various factors viz., mechanical properties & composition of the material, manufacturing process including heat treatment, applicable stresses etc. Hydrogen assisted cracking is commonly classified into three categories based on initiation, morphology and stress involvement in cracking as, Hydrogen Induced Cracking (HIC), sulfide Stress Cracking (SSC) and Stress Oriented Hydrogen Induced Cracking (SOHIC).

The current paper discusses about metallurgical factors which play major role in Hydrogen Induced Cracking of flat rolled steels commonly used in manufacturing of pipelines and pressure vessels in oil & gas industry as found in several studies.

Keywords:

Hydrogen Induced Cracking (HIC), inclusion, microstructure, diffusion.

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