



Poster 3

Steel susceptibility to hydrogen induced failure

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ABSTRACT:

Strict sustainable development agreements are driving a profound decarbonisation of the energy sector. A low-carbon alternative currently under debate is the 'hydrogen economy', in which H₂ will be used as an energy vector in several applications.

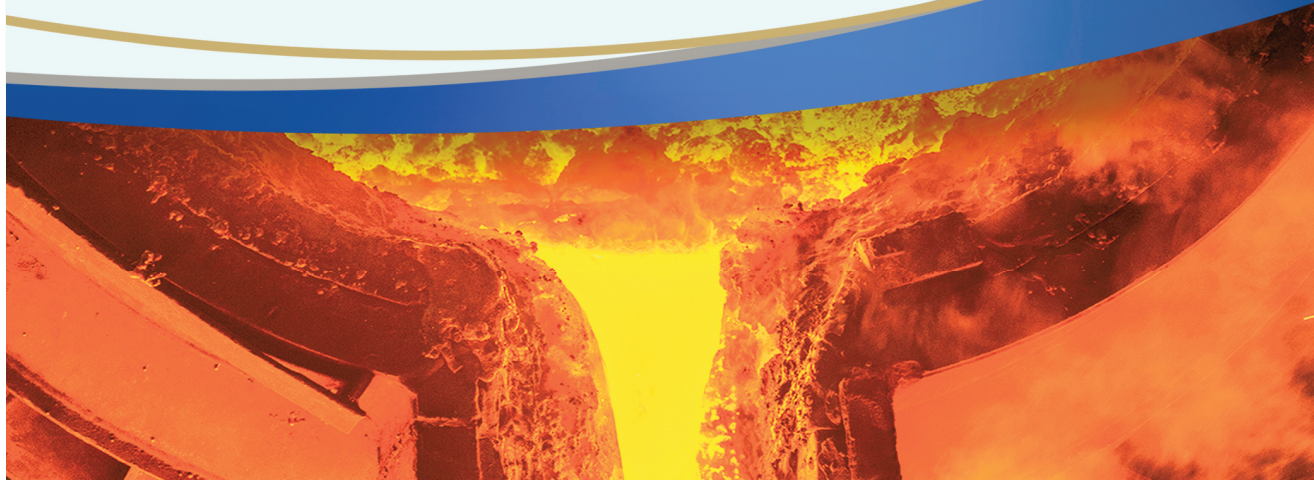
However, its large-scale implementation will require an update and expansion of the current gas transportation and storage infrastructure, in which steel pipelines and pressure vessels play a crucial role. The aim of this project is to understand how these unique service conditions (e.g. hydrogen sources, temperature and pressure variations) influence the susceptibility of several high strength steel grades produced by Tata Steel to hydrogen induced failure.

A deep understanding of the chemical composition, microstructure, mechanical properties, corrosion resistance and hydrogen susceptibility of these steels will be acquired. The outputs of this project will allow Tata Steel to develop an optimum steel alloying, manufacturing processes and microstructural design strategy for the service conditions considered.



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