

Seminar

Institute for Plasma Research

Title: Effect of boron modification on microstructure in HAZ of P91 steel for better resistance to type IV cracking

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Date: 10th May 2024 (Friday)

Time: 03.30 PM

Venue: Seminar Hall, IPR

Abstract

The prime objective of this work was to study microstructural features and creep behaviour of P91 and boron modified P91B steels in parent metal state as well as evolved after heat affected zone (HAZ) simulations. This work demonstrated the applicability of impression creep technique for the alloy development activity and its suitability to characterize creep deformation behaviour of narrow microstructural regions, within HAZ and the parent metals. This investigation was, therefore, planned to study the effect of boron modification in creep resistant steel P91 and its subzones of HAZ. Some of the key and novel achievements of this work were physical insights on the influence of boron modification of P91 steel on its creep behaviour, characterization using impression creep test, the use of combination of advanced characterization techniques including EBSD and TEM to study various dependences and microstructural evolution, and development of scientific basis for better understanding on improvement and optimization of 9-12Cr steels, the in-service failure such as type IV cracking mechanisms, which is a most critical fracture mode at component level of power plant piping systems. In this respect, my talk on the mentioned subject will cover the key achievements so far obtained, some of the work-in-progress, and its future directions.
