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Study on IV type cracking mechanism of CrMoV heat-resistant steel

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ABSTRACT

This paper reviews work related to the crack mechanism of CrMoV heat-resistant steel which mainly used in power plant steam pipe weldments. An investigation of metallurgical structures and properties of “IV Type” region at the outer edge of the weld heat affected zone (HAZ) in CrMoV steel steam pipework were described. Weld thermal simulation by Gleeble thermal simulation machine has been employed to characterize the IV Type region microstructure and hardness as a function of simulation peak temperature and simulated weld heat input. A range of peak temperatures 750/790/825/860/900/950°C was used in the weld IV Type region thermal cycle simulation. Low- and high-simulated weld heat inputs, 8 and 40 kJ/cm, were used. The work reveals the IV type cracking mechanism and law in CrMoV heat-resistant steel weldments. It helps to find a way to improve weld repair procedures to obtain optimum weld microstructure and long-term service performance.

KEYWORDS: cracking, CrMoV steel, weldments, thermal simulation