

보일러용 고강도 T23강의 용접부 손상 원인 분석

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Diagnosis of cracking in T23 welds for power plant application

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Abstracts

This paper has been performed in order to figure out the reason of failure in T23 weldments used for boiler tube at 550 °C. Defects such as cracks and cavities occurred in CGHAZ (coarse grain heat-affected-zone) and multi pass of weld metal, and these crack propagated along grain boundary. Microstructure evolution such as grain growth and carbide precipitation was investigated by optical microscope (OM), transmission electron microscope(TEM). Moreover, Auger electron spectroscopy (AES) was employed in order to examine segregation along the grain boundaries. There is significant difference in grain size and precipitation distribution in the region where cracking took place. In addition, sulfur segregation was observed. Based on the results of this investigation, it has been possible to establish that this type of cracks were consistent with reheat cracking and creep damage. Selection of optimal filler metal, heat input, and PWHT temperature is required for prevention in order to avoid this type of cracking.

Key Words : T23, Weldments, PWHT Cracking, Precipitation, Segregation