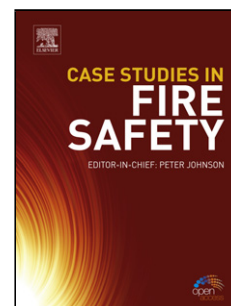


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Stress corrosion cracking behavior of SUS301L-MT stainless steel laser-arc hybrid welded joints

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Highlight

- Laser-arc hybrid welding (LAHW) has potentially employed for the excellent welding of cold rolled SUS301L stainless steel, promising for new generation subway vehicles underframe, due to its low heat input and high welding speed. However, the stress corrosion cracking (SCC) behavior of this type welded joints is still unclear, which seriously obstructs its wide applications. Here, in combination with the fracture morphologies, microstructures and potentiodynamic polarization of the weld metal (WM), heat affect zone (HAZ) and base metal (BM), the facile slow strain rate tensile (SSRT) technology were applied to systematically investigate its SCC behavior in 3.5 wt.% NaCl solution by using 8 mm thick LAHW-based SUS301L-MT stainless steel as BM. As a result, the SCC susceptibility index (I_{SSRT}) of welded joints is as low as 0.09, lowering 2.56 times compared with that of BM (0.23). So low I_{SSRT} should be mainly attributed to the cathodic protection of

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