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Open Access Article

Fatigue Performance of Thin Laser Butt Welds in HSLA Steel

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Abstract

This work is focused on understanding the significant factors affecting the fatigue strength of laser-welded butt joints in thin high-strength low-alloy (HSLA) steel. The effects of the weld profile, imperfections, hardness, and residual stresses were considered to explain the results found in the S-N curves of four welded series. The results showed acceptable fatigue strength although the welded series presented multiple-imperfections. The analysis of fatigue behavior at low stress levels through the stress-concentrating effect explained the influence of each factor on the S-N curves of the welded series. The fatigue limits of the welded series predicted through the stress-concentrating effect and by the relationship proposed by Murakami showed good agreement with the experimental results. [View Full-Text \(/2075-4701/11/10/1499/htm\)](#)

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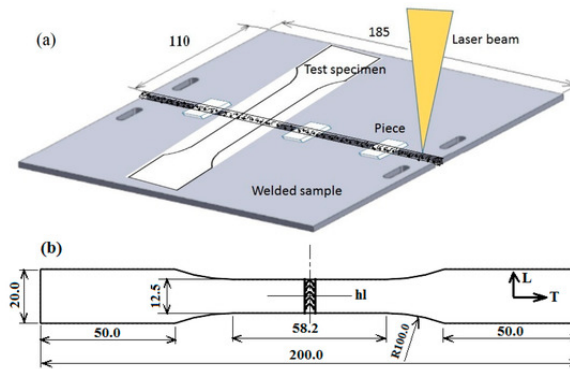


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