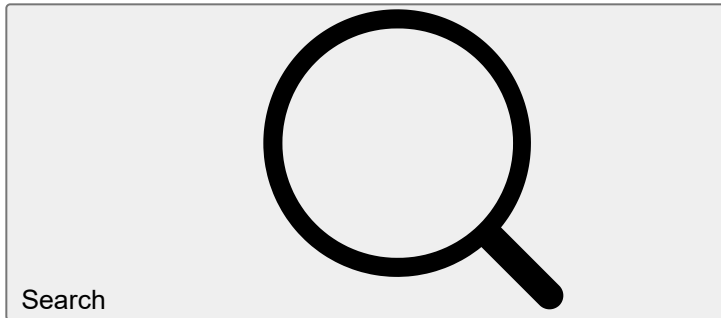


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Experimental validation on multi-pass weld distortion behavior of structural offshore steel HSLA S460 using FE-based inherent strain and thermo-mechanical method

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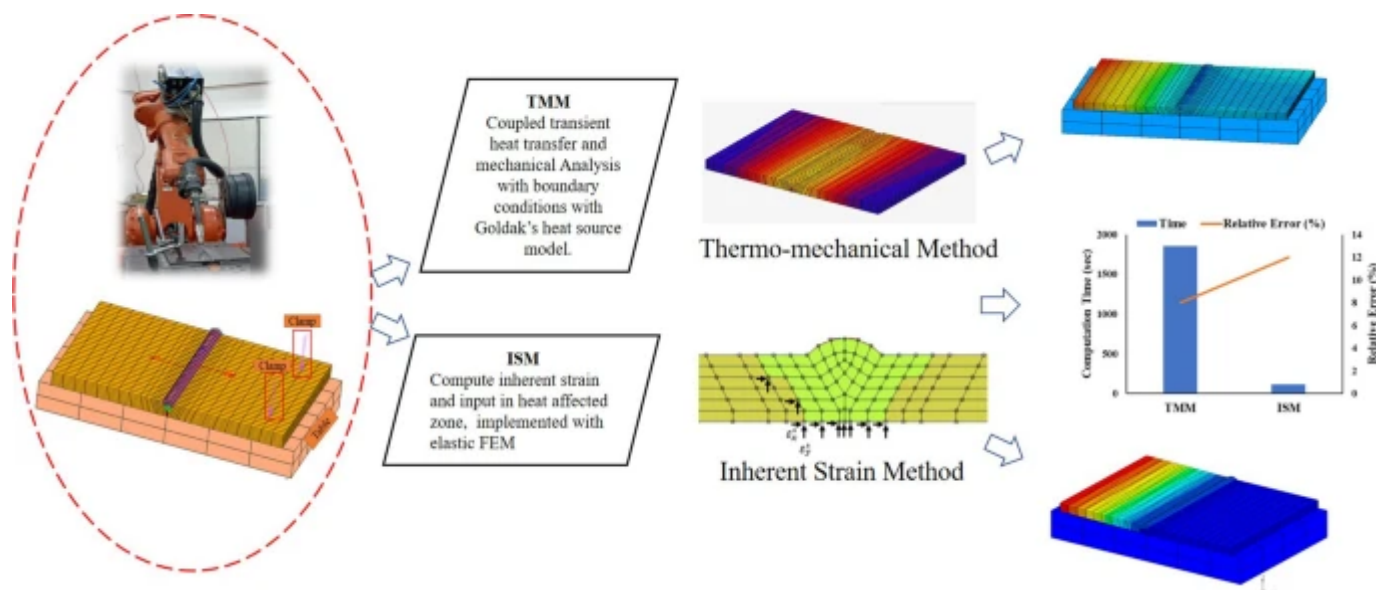
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Abstract

This study focuses on prediction of distortion behavior of multi-pass GMAW of structural offshore steel S460G2 + M using thermo-mechanical (TMM) and inherent strain (ISM) methods. In TMM, material properties including plasticity model were obtained from advanced material modeling software based on characterized elemental compositions and double ellipsoid heat source model is implemented. In ISM, residual plastic strain theory is developed based on initial strain value calculated in longitudinal and transverse direction. The predicted distortion and experiment values show an error margin within the range of 8% using TMM and 12% applying ISM with very low computation time.

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Figure 2

Figure 3

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Conflict of interest

The authors declare that no competing interests exist.

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