

## **Prediction of Welding Induced Distortion in Thin Metal Plates Using Temperature Dependent Material Properties and FEA**

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**Abstract :** Distortion produced during welding of thin metal plates is a problem in many industries. The purpose of this research was to study distortion produced during welding in 2mm Mild Steel plate by simulating the welding process using Finite Element Analysis. Simulation of welding process requires a couple field transient analyses. At first a transient thermal analysis is performed and the temperature obtained from thermal analysis is used as input in structural analysis to find distortion. An actual weld sample is prepared and the weld distortion produced is measured. The simulated and actual results were in quite agreement with each other and it has been found that there is profound deflection at center of plate. Temperature dependent material properties play significant role in prediction of weld distortion. The results of this research can be used for prediction and control of weld distortion in large steel structures by changing different weld parameters.

**Keywords :** welding simulation, FEA, welding distortion, temperature dependent mechanical properties

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