SIMULATION STUDY OF WELDING JOINT BY USING SYSWELD

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"I declared that this thesis is the result of my own work except the ideas and summaries which I have clarified their sources. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any degree."

Signed : ....

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ABSTRACT

In this study, the distortion of multipasses welding have been analysed using Finite Element Analysis (FEA) simulation method. Due to the extensive capabilities and dedicated tools for the simulation of welding, which include material deposit via element activation or deactivation and predefined or customized moving heat sources, SYSWELD was chosen as the FEA software. Compared to other FEA software SYSWELD is design specifically for welding process and it is hope that by using SYSWELD the behavior of multipasses welding process can be predicted. The simulation begins with the selection of heat source model represented by the Goldak's double ellipsoid model which is within the code. The parameters of this model were defined by the welding speed, electrical power, type of the material and thickness of the material being used. The model is dedicated for multipasses welding techniques using Gas Metal Arc Welding (GMAW) process which is commonly applied in fabrication industry. The SYSWELD software is used to simulate GMAW process on mild steel plates through butt joint. The study describes the heat source fitting, mechanical and thermal analyses of the multipasses welding. The study also been done to investigate the step by step methodology of multipasses welding analysis. The optimum process parameters especially clamping conditions for the multipasses welding process will be investigated to minimize distortion.

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