

진공 용기 제작시 공정별 변형 예측에 관한 연구

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A Study on the Prediction of Welding Distortion of Vacuum Vessel during Fabrication Process

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Abstract

The purpose of this study is to clarify the transitional behavior and main factor of excessive welding distortion caused by fabrication process of STS 304 vacuum vessel having double curvature for the efficient quality control of vacuum vessel. In order to do it, the predictive equations of the welding distortion in simple weldment of vacuum vessel were established by conventional finite element analysis. And the principal factor controlling the welding distortion was identified by evaluating the welding distortion of vacuum vessel in each fabrication process with FEA and simplified thermo elastic method. Based on the results, the principal factors of distortion of vacuum vessel were clarified as angular distortion and transverse shrinkage which are a source of excessive out-of plane distortion in the double curved vacuum vessel. It was expected that the FE analysis results of this study could contribute to establish the proper control method of welding distortion for double curved vacuum vessel.

Key Words : Welding Distortion, Distortion Control, Vacuum Vessel, Finite Element Analysis