

## 진수후 데크 topside 용접부의 응력 거동 특성에 관한 연구

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### A Study on the Characteristic of Stress Behavior of Topside Weldment Welded after Launching

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#### Abstract

The purpose of this study is to evaluate the structural safety at the topside weldment of hull structure, which was welded after launching. For it, the variations of residual stress and distortion at the topside weldment with loading conditions such as hull girder hogging bending moment after launching and free initial loading state was evaluated by using FEA. And the maximum stress range at the weldment under design loads specified by classification society was evaluated by FEA. In this case, the residual stress and welding distortion at the topside weldment was assumed to be initial imperfection. In accordance with FEA results, regardless of initial loading condition, tensile residual stress was found. However, the residual stress and welding distortion at the topside weldment produced under hogging condition was less than those of topside weldment under free loading state. That is, the amount of residual stress at the topside weldment decreased with an increase in the amount of tension load caused by hogging condition. It was because the compressive thermal strain at the topside weldment produced during welding was reduced by tensile load. However, the maximum stress range at the topside weldment under maximum hull girder bending moment was almost similar regardless of initial loading condition. So, if the problem related to the soundness of weldment is not introduced by initial load, the effect of initial loading condition during welding on fatigue strength of topside weldment could be negligible.

**Key Words** : Topside Weldment, Hull Structure, Tensile Stress, Tension Load, Residual Stress, Finite Element Analysis