

굴삭기 붐 구조물 용접부 피로강도 특성연구

박상철*, 김현수**

* 현대중공업(주) 산업기술연구소 수석연구원

** 현대중공업(주) 산업기술연구소 책임연구원

A Study on Fatigue Strength of Welded Boom Structures for Excavators

Sang-Chul Park*, Hyun-Soo Kim**

* Principal Researcher, Hyundai Research Institute, Hyundai Heavy Industries Co., Ltd.

** Senior Researcher, Hyundai Research Institute, Hyundai Heavy Industries Co., Ltd.

Abstract

A study on fatigue strength of welded boom structures for excavators was performed to verify structural integrity of components during operation of excavators. Three typical operating postures of excavators were employed for numerical analysis. At first, multi-body dynamic analysis for excavators was performed to evaluate reaction forces exerted at the joints of components during digging works of excavators, and then stress analysis was performed to investigate overall stress distribution of boom structures, focusing on the bottom plate of boom and diaphragm. Finally fatigue life estimation was made to evaluate reliability of welded boom structures using a simplified Miner's rule and IIW fatigue curves.

Key Words : Excavator, Boom Structures, Welded Joint, Dynamic Analysis, Stress Analysis, Diaphragm, Fatigue Life Estimation