

## 수치해석을 이용한 Tire Mold용 Al 금형의 온도분포 해석에 관한 연구

양호동<sup>†</sup>(조선대 원) · 오을권\*(조선대) · 서동표\*\*(광주인력개발원) · 박근욱\*\*\* · 김우진\*\*\*(조선대 원)

### A Study on Analysis of Temperature Distributions of Al Metal Mold for Tire Manufacturing by Numerical Work

Ho-Dong Yang, Yool-Kwon Oh, Dong-Pyo Seo, Keun-Uk Park and Woo-Jin Kim

**Key Words:** Finite Element Method(유한요소법), Contraction rate(수축량), Al alloy(Al합금)

**Abstract :** The plant of Al alloy mold must be established to produce the good quality tires. But mild steel molds are used as tire mold which is consist of one piece. This type of metal mold is more economic in the total cost but the quality of product is not good. Therefore, in the present study, Al alloy mold which consist of six pieces was introduced. And, numerical work using a finite element method (FEM) was applied to analyze that Al alloy mold was happened the characteristics of temperature distributions. Also, the contraction rate occurred by temperature distributions investigated to predict the accurate measurement variations of Al alloy mold.

## 고로 Stave 열전달 해석 및 관리방안

이건호<sup>†</sup>(포항공대) · 최치웅\*(포항공대) · 김무환\*(포항공대)

### Blast Furnace Stave Heat Transfer Analysis and Management

Lee Kun Ho, Choi Chi Woong and Kim Moo Hwan

**Key Words:** Blast Furnace(고로), Stave(스태이브), Cooling System(냉각시스템).

**Abstract :** The blast furnace is used for iron making from ore and coke and it needs cooling system for furnace body. Stave which is made by cast iron is a type of blast furnace cooling system and designed according to the heat load of furnace. Wearing of stave surface is continued because of the friction with materials in furnace and accelerated rapidly over certain temperature. In this study, the cooling system of stave are numerically investigated with three parameters; wear thickness, cooling water velocity and the change of gas temperature. Fluent 6.1 is used for simulation. So, flow and thermal characteristics of cooling water for each wear thickness and gas temperature are obtained. With the results, acceptable method for cooling system management is studied to prolong the life of blast furnace by decreasing of stave wear.