

## 이종재료(STS304+Al6061) TIG-FSW Hybrid

### 용접부의 열 특성 해석

엠.에스.비조이\* · 방희선\*\* · 방한서\*\*

\*조선대학교 대학원 선박해양공학과

\*\*조선대학교 선박해양공학과

## Analysis of Complex Heat Distribution in TIG Assisted Friction Stir Welding of Dissimilar Materials (STS304+Al6061)

M.S.Bijoy\*, Hee-Seon Bang\*\*, Han-Sur Bang\*\*

\*Dept. of Naval Architecture & Ocean Eng., Graduate School, Chosun University, Gwangju 501-104, Korea

\*\*Dept. of Naval Architecture & Ocean Engineering, Chosun University, Gwangju 501-104, Korea

### Abstracts

Friction stir welding has become a viable and important manufacturing alternative or fabrication component, especially in aerospace and automobile applications involving aluminium alloys. In recent years, there is an increasing interest for FSW of dissimilar metals and alloys, particularly systems which are difficult to weld by conventional, thermal (or fusion) welding. In this study we tried to analyse the complex heat distribution occurring in TIG assisted FSW of dissimilar butt joint (STS304 and Al6061). For this, an analytical model for heat generation by FSW based on contact conditions has been developed. The heat input was calculated considering the coefficient of friction and slip factor between each work piece material with the tool material. The thermal model is used to generate the temperature characteristics curve, which successfully predicts the maximum welding temperature in each alloys. The analysis was carried out using the in-house solver.

**Key Words** : TIG-FSW, butt joint, FEM, heat input, heat distribution