고주파 유도용접의 용접 변수에 관한 연구

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A Study on the Effects of Welding Variables in High Frequency Induction Welding

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Key Words: High Frequency Induction Welding(고주파 유도용접), Welding Variables(용접변수), Eddy current(와전류), Impeder(임피더)

Abstract : In this research, welding variables that affects quality of the weld vee during high frequency induction welding are investigated. The welding variables involved in this study are the frequency of the source current, the weld speed, the vee angle and the thickness of the tube. Temperature distribution of the tube is calculated through three dimensional coupled electromagnetic and thermal FEM analysis. In the electromagnetic analysis, skin effect and proximity effect are considered. The influence of the impeder is also analyzed. Heated zone(HZ) is presented as a measure of the welding efficiency. The effects that the operating welding variables have on the temperature distribution are investigated quantitatively by exhibiting Heat Affected Zone(HAZ) and heated zone area.

디스크 브레이크 임계속도에 의한 Hot Spot Analysis

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Hot Spot Analysis on the Critical Speed of the Disk Brake

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Key Words: Thermo-elastic instability(열탄성 불안정성), Hot spot(열섬), Hot judder(고온 저더), Critical speed(임계속도), Low frequency vibration(저주파 진동)

Abstract : The purpose of the disk brake is to decelerate and stop the automobile as soon as possible by using the frictional force between the disk and pad. However the disk brake system is affected by the thermal problems such as wear and thermal crack. Due to these problems vibrations are produced and resulting into shortened life or breakdown of the disk brake system. Hot spot, which is a type of thermal problem, is the portion inside the disk where the heat is locally concentrated. The hot spot causes thermo-elastic instability(TEI). When the area of the hot spot increases continuously, it causes hot juddering into the braking system, which is a serious low frequency vibration and noise problem.