

폐쇄 단조 기술을 이용한 마그네슘합금 임펠러 제조 기술 개발

강성훈#, 권용남, 김상우, 이정환

Enclosed-Die Forging of Magnesium Alloy Impeller

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In this work, isothermal enclosed die forging technology is introduced to produce magnesium alloy impeller. Due to the complicated blade of the impeller, the specially designed split die should be adopted for successful forging of impeller. Since the generation of burr between the split dies is inevitable during the forging, it was designed to prevent the burr generation such that coherence of stress ring and split die can be increased by the forging pressure. Using the specially designed die-set, the impeller forging experiments were carried out using magnesium alloys AZ31 and ZK60 grain-refined through ECAP. In order to find the optimum process conditions such as temperature and strain rate, the tensile test and thermal stability test were carried out. Finally, the change in microstructure and microhardness at the various positions of the forged impeller were investigated to compare with those of the initial billet.

Keywords: Magnesium alloy impeller, Isothermal enclosed die forging, Split die

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