

Multivariate Simulations of the Process of Forming the Automotive Connector Forging from ZK60 Alloy

Authors : Anna Dziubinska

Abstract : The article presents the results of numerical simulations of the new forging process of the automotive connector forging from cast preform. The high-strength ZK60 alloy (belonging to the Mg-Zn-Zr group of Mg alloys) was selected for numerical tests. Currently, this part of the industry is produced by multi-stage forging consisting of operations: bending, preforming, and finishing. The use of the cast preform would enable forging this component in one operation. However, obtaining specific mechanical properties requires inducing a certain level of strain within the forged part. Therefore, the design of the preform, its shape, and volume are of paramount importance. In work presented in this article, preforms of different shapes were designed and assessed using Finite Element (FE) analysis. The research was funded by the Polish National Agency for Academic Exchange within the framework of the Bekker programme.

Keywords : automotive connector, forging, magnesium alloy, numerical simulation, preform, ZK60

Conference Title : ICMFPMT 2022 : International Conference on Metal Forming and Process Modelling Technologies

Conference Location : Athens, Greece

Conference Dates : October 13-14, 2022