Study on Springback Rule of AZ31B Magnesium Alloy Axisymmetric Part's Warm Single Point Incremental Forming without Mould

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It is necessary to study and master the springback rule of single point incremental forming of magnesium alloy on different process parameters, which has important theoretical and practical application value to complement and perfect the springback control technology of single point incremental forming of magnesium alloy. Taken the variable angle truncated cone as the research object, used the ANSYS/LS-DYNA as research tool, viewed the springback amount as research criteria, the influence of different process parameters to the springback of single point incremental forming is studied in this paper, which includes forming temperature, friction conditions and tool diameter. The results show that the springback could be effectively controlled when the forming temperature is 250℃, the static friction coefficient is 0.2, the coefficient of kinetic friction is 0.1 and the diameter of the tool is between 10mm and 12mm.

Keywords: AZ31B magnesium alloy, single point incremental forming, springback, numerical simulation

Acknowledgement

This project is supported by National Natural Science Foundation of China (Grant No. 51305241), The Science and Technology Project for the Universities of Shandong Province: J12LA03; and Taishan Scholarship Project of Shandong Province, China (No. tshw20130956).

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Paper number: M2014115