박판 V-notching 성형 공정을 위한 내연적 기법과 외연적 기법의 적용

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Application of Implicit and Explicit Finite Element Methods for V-notching Process of Thin sheet Metal

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Abstract

Micro V-notching process of very thin sheet metal is similar to stamping process, but the process design for micro V-notching operation is highly. Finite element scheme as an effective tool could provide some important information for evaluation and optimization of the design of forming process. In this study, the comparison of each simulated result between explicit and implicit scheme in ABAQUS was confirmed the reliability of the explicit one in terms of the predicted geometrical shape, the effective stress and the effective plastic strain. The influence of time and mass scaling which have been commonly used to minimize computational time was investigated in this micro V-notching process simulation. Moreover, prototypes were manufactured to verify the propriety of finite element analysis results. And numerical and experimental result between the cross-sectional shape and thickness distribution of the micro V-notching part were also compared in this study. From the comparison results, the cross-sectional shape and the thickness distribution were similar to each other. Consequently, finite element analysis model for the micro V-notching process could be good made and verified.

Key Words : Micro V-notching Process, Process Design, Explicit, Implicit, Finite Element Analysis

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