金屬板材半球型沖頭之孔凸緣貫穿成形分析

A methodology for formulating an elasto-plastic finite element model, which is based on Prandtl-Reuss flow rule and Hill's yield criterion respectively, associates with an Updated Lagrangian Formulation. The numerical simulation results include relations hip between punch load and punch displacement, variation of the workpiece thickness, and forming limit. The finite element model is developed to simulate isotropic, normal anisotropic, and anisotropic of hole-flanging penetration process. The accuracy of the finite element program is based on a comparison between the simulation and experiment outcomes. Several simulations are performed on diverse Lankford parameters R0, R45, R90 and distinct punch profile radius. When the orientation of expanded hole circumference to rolling direction is at 90.degree.,the thickness of workpieces is various from three types of analyses. Anisotropic analysis determines the thickest workpiece and isotropic analysis the thinnest. As to penetrated height, at the same orientation, isotropic analysis determines the highest workpiece and anisotropic analysis the lowest. When punch profile radius becomes greater, maximum punch load decreases progressively.