Title:

Stress analysis of cylindrical parts during deep drawing based on Dynaform

Abstract:

In this paper, the Dynaform numerical method was used to simulate the deep drawing process of the cylindrical parts. The distribution of the thickness, stress and strain of the cylindrical part during multi-stage deep drawing, as well as the possible defects of the cylindrical parts at this time, were compared without using blank holder, using the flat blank holder or using cone-shaped blank holder. The one-step drawing showed that the use of flat blank holder or cone-shaped blank holder didn't have too much difference in stress and strain distribution. Based on the one-step drawn part, the stress and strain under different conditions at the second-step drawing showed that the use of cone-shaped blank holder could prevent the wrinkling and crack of the work-piece. The numerical simulation technologies presented in this paper can be used in the early analysis of such a complex process during the mold design, so as to predict and control the possible defects in the process of material processing, which can be used as a reference to verify the reliability of mold design.