

Optimization of Pressure in Deep Drawing Process

Authors : Ajay Kumar Choubey, Geeta Agnihotri, C. Sasikumar, Rashmi Dwivedi

Abstract : Deep-drawing operations are performed widely in industrial applications. It is very important for efficiency to achieve parts with no or minimum defects. Deep drawn parts are used in high performance, high strength and high reliability applications where tension, stress, load and human safety are critical considerations. Wrinkling is a kind of defect caused by stresses in the flange part of the blank during metal forming operations. To avoid wrinkling appropriate blank-holder pressure/force or drawbead can be applied. Now-a-day computer simulation plays a vital role in the field of manufacturing process. So computer simulation of manufacturing has much advantage over previous conventional process i.e. mass production, good quality of product, fast working etc. In this study, a two dimensional elasto-plastic Finite Element (F.E.) model for Mild Steel material blank has been developed to study the behavior of the flange wrinkling and deep drawing parameters under different Blank-Holder Pressure (B.H.P.). For this, commercially available Finite Element software ANSYS 14 has been used in this study. Simulation results are critically studied and salient conclusions have been drawn.

Keywords : ANSYS, deep drawing, BHP, finite element simulation, wrinkling