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COMPARATIVE STUDY ON SPRING BACK EFFECT OF SHEET METAL MATERIALS AND MINIMIZING THE EFFECT BY OPTIMIZING THE LOADING CONDITION

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Abstract

Sheet metal is a metal formed by an industrial process into thin, flat pieces. It is one of the fundamental forms used in metalworking and it can be cut and bent into a variety of shapes. Products formed from sheet metal require high precession and accuracy, so that they can be easily assembled with matting parts. The small deviation in the given tolerance will result in rejection of the part. The deviations are not because of unskilled labours or general factors but it occurs due to the contraction in work piece, after release of the tool or punch. This phenomenon is called as spring back effect. In this work, we are going to study and compare the spring back effect of two materials (AMS 5504 & Aluminium alloy). Also, a study is made on the causes for spring back effect and its remedial factors. Among the available factors, concentration is given only on the load factor. Spring back effect is minimized by finding the appropriate loading conditions that is applied to the punch. This approximation process is carried out using FEA software in order to reduce the manufacturing cost. For this work, the modelling will be carried out using Solid works package and FEA analysis is carried out using ANSYS software.

Key words: spring back, FEA, ANSYS software, Tolerance.

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