

## **A Study on Optimum Shape in According to Equivalent Stress Distributions at the Die and Plug in the Multi-Pass Drawing Process**

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**Abstract :** Multi-stage drawing process is an important technique for forming a shape that cannot be molded in a single process. multi-stage drawing process in number of passes and the shape of the die are an important factors influencing the productivity and formability of the product. The number and shape of the multi-path in the mold of the drawing process is very influencing the productivity and formability of the product. Half angle of the die and mandrel affects the drawing force and it also affects the completion of the final shape. Thus reducing the number of pass and the die shape optimization are necessary to improve the formability of the billet. Analyzing the load on the die through the FEM analysis and in consideration of the formability of the material presents a die model.

**Keywords :** multi-pass shape drawing, equivalent stress, FEM, finite element method, optimum shape

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