ABSTRACT

The objectives of this study are :

1. To design a draw punch for the purpose of deep drawing a cylindrical cup.
2. To improve the draw punch design by determining the static and dynamic reliability of the draw punch.
3. To determine the life span of the draw punch under dynamic loading.

A static load is a force which has an unchanging magnitude, unchanging points of applications and unchanging direction. In this study, static analysis was performed using the Finite Element Method. Three different static failure theories namely *Maximum Normal Stress Theory*, *Maximum Shear Stress Theory* and *Distortion Energy Theory* were used to determine the static reliability based on the responses from Finite Element Method tools.

A dynamic load is any load which has a changing magnitude, direction and positions of applications. As such, the responses to dynamic loading such as stresses are also dynamic and varying with time. Dynamic analysis was performed using the Finite Element Method tools. The most significant characteristic of this dynamic analysis is that these dynamic stresses can cause fatigue failures although the actual maximum stress is below the yield strength. Failures have been caused by stresses that have been repeated for a large number of times.