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Abstract

A model of punching process, has been proposed . The punching process is divided into 2 stages : indenting and shearing stages. Punching force is proportional to the depth of indentation in indenting stage while it is constant in shearing stage.

Theory of plasticity is used for force and energy analysis. The workpiece is assumed to be rigid-perfectly plastic material. Analysis of stress in the punch makes use of elasticity theory.

Numerical results show that the cutting edge angle using minimum energy punching without punch failure is about 43 degree for the high speed steel punch at 2 mm copper plate.

By comparing theoretical punching force with experimental force, the first one is about 25 % lower than the later.



Committee Chairperson