

VARIABLE DRAWBEAD HEIGHT AND VARIABLE CONTACT PRESSURE AS TRIBOLOGICAL INFLUENCES IN SHEET METAL STRIPE SLIDING TEST

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ABSTRACT

For this experimental research, electro-hydraulic computerised device for sheet metal stripes sliding was made. Its main property is realisation of contact pressure and drawbead height as functions dependent on time, i.e. stripe travel. In addition, it is also possible to measure drawing force, pressure, drawbead displacement, etc.

The paper presents the preliminary results of the investigation of decreasing drawbead height influence in combination with increasing-decreasing contact pressure function. The stripes are made of low-carbon steel sheet metal of 0.8 mm thickness. Contact conditions are influenced additionally in 2 ways – by mineral oil lubrication, and dry surfaces application. Drawbead geometry, with rounding radii of 2 and 5 mm, is also varied.

The results indicate that simultaneous influence of variable drawbead height, variable contact pressure, drawbead geometry and proper friction conditions can influence substantially the plastic flow process.

Keywords: deep drawing, variable friction conditions, variable drawbead height, variable contact pressure.

AIMS AND BACKGROUND

Due to the significance and complexity of the process of thin sheet metals deep drawing, the tendency to accomplish the control of forming process is the latest trend. In order to succeed in that, it is necessary to select out of a large number of influential factors, the ones which can be varied throughout the forming process, thus correcting it until it is completed successfully. There are only 2 such factors: contact pressure and drawbead height¹.

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