Experimental investigation of the cutting force reduction during the blanking operation of AHSS sheet materials

Within the manufacturing process of sheet metals, blanking represents an essential process operation. As the industrial application of high-strength multi-phase steels grows, the blanking process must consider high blanking and shear forces which are characteristic of these materials. This paper presents possibilities for reducing these forces. Experiments were performed utilizing a novel tool concept which can correlate necessary blanking forces to the punch stroke in three dimensions and in direct force path. Results from three different AHSS materials are presented showing the variation of decisive blanking parameters such as clearance, shearing angle and sheet positioning angle.

Stichworte: Cutting; Force measurement; Sheet metal

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