

Analysis of the metal sheets formability at single point incremental forming process

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Abstract. Although research on incremental forming process began a few decades ago, it is still a process in development phase. Single point incremental forming is a simple process and the deformation of the sheet blank is done with the help of a punch that follows a known toolpath. In the case of this process, one important aspect is the prediction of material failure. To achieve this with the help of a finite element analysis, a series of experiments were performed to determine the forming limit diagram. In this paper, an attempt has been made to determine the forming limit diagram for the AA1050 aluminium alloy and DC01 steel sheets. The experiments were performed with the help of an industrial robot, KUKA KR 210-2, thus the part can be measured with an optical measuring instrument obtaining the major and minor strain from forming limit diagram.

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