

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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Project Report On

“SCORING/GALLING ON SHEET METAL FORMED PANELS”

(Sponsored by KSCST, IISC BANGLORE-12)

Submitted in partial fulfilment of the requirements for the award of degree of

BACHELOR OF ENGINEERING IN MECHANICAL ENGINEERING

During the Academic year 2010-11

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2010-11

ABSTRACT

Sheet metal behavior during the actual press production is difficult to define and measure. As mentioned, production is a complex interaction of many variables so that the effect of variable is difficult to observe, much less measure, therefore most information is restricted to an obvious lubrication effect Scoring and Galling.

During deformation of metal over a tool, contact occurs only at the peaks of the sheet and the tool surface, depending on the morphology of the surfaces, high contact pressure can be generated which cause micro welding of the asperities. Upon surface sliding these welds are sheared, the resulting debris may then adhere to the tool surface and scratch the work piece. This phenomenon has been called Scoring, Galling and metal pick up. Even with a lubricant, plastic deformation of the surface asperities may lead to prow-like debris.

Many investigations have been conducted to define the effect of sheet metal roughness on Galling. These studies have shown that non galling surfaces generally had an arithmetical average roughness of $R_a=0.7$ to 1.5 micrometers and a peak density of 3.7 to 5.7 peaks per mm. Less roughness and greater peak density were shown to be detrimental because the surface area become too large compare to the valleys. The debris generated could not become trapped in the valleys to be removed from the deformation zone and the lubricant. Therefore had only minor reservoirs.