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Factors Affecting Weld Line Movement in Tailor Welded Blank

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Abstract : Tailor Welded Blanks (TWB) are utilized in automotive industries widely because of their advantage of weight and cost reduction and maintaining required strength and structural integrity. TWB consist of two or more sheet having dissimilar or similar material and thickness; welded together to form a single sheet before forming it to desired shape. Forming of the tailor welded blank is affected by ratio of thickness of blanks, ratio of their strength, etc. mainly due to in-homogeneity of material. In the present work the relative effect of these parameters on weld line movement is studied during deep drawing of TWB using FE simulation using HYPERWORKS. The simulation is validated with results from the literature. Simulations were than performed based on Taguchi orthogonal array followed by the ANOVA analysis to determine the significance of these parameters on forming of TWB.

Keywords : ANOVA, deep drawing, Tailor Welded Blank (TWB), weld line movement
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