

عنوان مقاله:

The Effect of Variation in Mechanical Properties and Friction Conditions on Acceptable Range of Blank Holder Force

محل انتشار:

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خلاصه مقاله:

In the present paper, the effect of variant material properties and frictional conditions in stamping process of automotive body panel is investigated numerically by Finite Element Method (FEM). An acceptable blank holder force (BHF) range is considered as studying factor where the final deformed part is achieved defect free. Numerous numerical simulations have been performed to obtain the safe region of BHF that is bounded by two critical curves. For each specific material property with variant frictional condition, the rupture and wrinkling tendency critical curves obtained. The experimental observations showed good agreement with FE predicted BHF amount. From the FE results, it is expected that the minimum acceptable BHF magnitudes (slightly above the critical wrinkling tendency curve) is the optimal adjusted BHF for safe formed part with forming energy consumption. Also, the lower amount of friction coefficients provides the wider proper BHF range for adjusting press easily.

کلمات کلیدی:

Blank holder force, Optimal value, Finite element method, Defect free product, Experimental observation

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