عنوان مقاله:

Finite Element Modeling and Experimental Study of the Spline Tube Forming

محل انتشار:

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خلاصه مقاله:

Metal forming processes, compared with machining ones, reduce production steps and increase manufacturing speed in addition to saving raw material. In this paper, forming process of column of a steering mechanism is investigated by finite element analyses and experimental tests; and optimum die design parameters are found. Forming process parameters including die opening angle, bearing length, clearance between work piece, die and friction coefficient were studied. Some new ideas were also used in manufacturing process of dies with compression tube forming process. Without using an appropriate lubricant, friction coefficient between die, tube, the probability of tube distortion and tube bulging increased significantly. The forming force is also strictly dependent on friction coefficient and it also increases with increasing bearing length of the die. The manufactured sample had good agreement with the original drawing of profile appearance and dimensions. Effects of die and tube clearance on the required force and final part surface quality are also investigated.

کلمات کلیدی:

Steering column, Finite element analyses, Cold extrusion