عنوان مقاله:

Optimization of Die Geometry for Tube Channel Pressing

محل انتشار:

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خلاصه مقاله:

Since tubes have numerous industrial applications, different attempts are focused on the severe plastic deformation processes of tubes. As an illustration, Tube Channel Pressing (TCP) is an attractive process for this purpose since it can be used to process different sizes of tubes. However, more attempts are needed to improve the outcomes of TCP. For example, the imposition of a greater strain besides reductions in the strain heterogeneity are the challenges of this process. This work is aimed to optimize the die geometry of TCP through a finite element simulation procedure verified by experiments in order to increase the imposed strain as well as decreasing the strain heterogeneity. Results show that the increase in die curvature radius causes the reduction of imposed plastic strain and an increase in strain heterogeneity. In addition, the minimum amount of die convex height for the imposition of a reasonable strain through TCP is calculated considering the tube thickness and the channel angle. In addition to this, the optimum die geometry is recommended in order to minimize the strain heterogeneity

کلمات کلیدی:

Severe plastic deformation, Finite element simulation, Strain analysis