عنوان مقاله:

A New Method of Ti6Al4V Hydroforming, used in Aerospace Structurs

محل انتشار:

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خلاصه مقاله:

In this paper, Ti6Al4V as the most famous Alloy of Ti with a wide range of applications in aerospace industry is formed by means of hydroforming technology which is improved by a new floating disk, which makes it possible to be formed in ambient temperature and gives higher drawing ratio. The effects of process parameters on different cylindrical cups of Ti6Al4V are discussed. Working pressure curves, which guarantee sound Ti6Al4V work pieces, was founded by series of numerical & experimental results. Thickness distribution, wrinkling and fracture modes are discussed. All the experimental results are compared with numerical results simulated by ABAQUS 6.7. Hydromechanical stamp forming is experimentally & numerically tested too. In order to do the experimental tests a special hydroforming die which is assisted by a floating die is invented, designed and manufactured. To do the forming process a new hydraulic circuit was also designed and assembled on a hydraulic press. NADDRG, Hill-swift and El-Domiaty theoretical FLD models were used to specify fracture initiation and compared with each other. According to comparisons there is a good agreement between experimental and numerical results.

کلمات کلیدی:

Ti6Al4V, Hydroforming, Sheet Forming, Wrinkling

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