عنوان مقاله:

A Hybrid Approach Based on Numerical, Statistical and Intelligent Techniques for Optimization of Tube Drawing Process toProduce Squared Section from Round Tube

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خلاصه مقاله:

In tube drawing process, there is a bunch of parameters playing key roles in the processperformance. Thus finding the optimized parameters is a controversial issue. The current studyaimed to produce a squared section of round tube by tube sinking process. Finite element method(FEM) was used to simulate the process. Then, to find a meaningful kinship between process inputand output parameters the developed FE model was associated with the design of an experimentbased on response surface methodology (RSM). The sufficiency of each model was checked byanalyzing the variances. Further, the SA (simulated annealing) was associated with RSM models tofind the optimal solution regarding maximum thickness distributions and minimum force anddimensional error. Hereafter, for performing accurate optimization, principal component analysiswas used to find the appropriate weight factor of each response. .The obtained results were in rightcongruence with those derived from the simulation and confirmatory experiment

کلمات کلیدی:

Tube sinking, square sections, Multi-objective optimization