

適應性網路模糊推論系統於方杯引伸最佳化料片之研究

This paper combines adaptive network fuzzy inference system (ANFIS) and dynamic finite element method to inversely predict profile of the optimum blank in square cup drawing process under a fixed punch stroke. At first, using ANSYS LS-DYNA to analyze the trial and error blanks of the square cup drawing, and adopting the deformed nodal coordinate along the profile to build input database for the ANFIS. From the hybrid-learning algorithm in ANFIS, it can efficiently construct profile of optimal blank according to the target square cup. As a verification of the theory, a set of die was designed and performed the square cup drawing experiment on the hydraulic forming machine. From comparison of the results between the experiment and simulation, such as the relationship between the punch load and displacement, the distribution of stress and strain, the distribution of blank thickness, the deform profile of optimum blank with target contour. A good coincidence was obtained between the experiment and simulation.