

Optimization of Process Parameters in Wire Electrical Discharge Machining of Inconel X-750 for Dimensional Deviation Using Taguchi Technique

Authors : Mandeep Kumar, Hari Singh

Abstract : The effective optimization of machining process parameters affects dramatically the cost and production time of machined components as well as the quality of the final products. This paper presents the optimization aspects of a Wire Electrical Discharge Machining operation using Inconel X-750 as work material. The objective considered in this study is minimization of the dimensional deviation. Six input process parameters of WEDM namely spark gap voltage, pulse-on time, pulse-off time, wire feed rate, peak current and wire tension, were chosen as variables to study the process performance. Taguchi's design of experiments methodology has been used for planning and designing the experiments. The analysis of variance was carried out for raw data as well as for signal to noise ratio. Four input parameters and one two-factor interaction have been found to be statistically significant for their effects on the response of interest. The confirmation experiments were also performed for validating the predicted results.

Keywords : ANOVA, DOE, inconel, machining, optimization

Conference Title : ICMSE 2016 : International Conference on Manufacturing Science and Engineering

Conference Location : Venice, Italy

Conference Dates : June 13-14, 2016