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Modeling and single objective optimization of WEDM process using AI tools

Pankaj Kumar Shrivastava and Shailendra Singh Parihar
AKS University, India

Understanding and solving the complexity of the manufacturing processes have always been a challenge for researchers. The tools of artificial intelligence are now boon to predict and solve the complex manufacturing behavior. In the present research, the wire electrical discharge machining (WEDM) has been performed on copper-iron-graphite metal matrix composite. Experiments have been performed in CNC wire cut electrical discharge machine. The obtained experimental results have been used to develop the artificial neural network model for two of the important output characteristics; material removal rate (MRR) and surface roughness (Ra). The models have found to be very accurate to predict the output characteristics. Further, genetic algorithm has been used to find the optimum values of MRR and Ra. Considerable improvement has been found in both the MRR and Ra after optimization.

psiitd@yahoo.com

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