Modeling of weld penetration in SAW process in the presence of boehmite nano-particles surface adsorbed by boric acid using MLP-ANN

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Abstract
This paper investigates the effect of boehmite nano-particles surface adsorbed by boric acid (BNBA) along with other input welding parameters such as welding current, arc voltage, welding speed, nozzle-to-plate distance on weld penetration. Weld penetration modeling was carried out using multi-layer perceptron artificial neural network (MPANN) technique. For the sake of training the network, 70% of the obtained data from experimentation using five-level five-factor central composite rotatable design of experiments was used. The performance of the network shows a good agreement between the experimental data and the data obtained from the network. Hence, it is to be concluded that MPANN is highly accurate in predicting the weld penetration in SAW process.

Keywords: Submerged arc welding, Weld penetration, Boehmite nano-particles, ANN.