PID controller tuning by particle swarm optimization on electrical discharge machining servo control system

Abstract :

Electrical Discharge Machining (EDM) is included in a stochastic process. So maintaining gap between electrode and workpiece is not easy. In order to control the gap, a proportional integral derivative (PID) controller is designed for EDM servo actuator system. The main goal of this work is to get PID parameters through Particle Swarm Optimization (PSO) algorithm to ensure a stable, robust and controlled system. The controller and the model for EDM die sinking are verified by simulation of the control system using MATLAB and simulink program. Simulation results verify the effectiveness of the PID controller in which its parameter determined by PSO to control the electrode position towards workpiece.