Grey Wolf Optimization of Fractional PID controllerin Gas Metal Arc Welding process

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Abstract : Gas metal arc welding (GMAW) plays the greatimportance in the welding industry. This paper presents a greywolf optimization (GWO) of fractional PID controller in orderto optimize arc length and arc current in the GMAW process.Firstly, fractional PID control of gas metal arc welding system isproposed, wherein the arc length and current of welding processare controlled, then the Grey Wolf Optimization is introduced tosolve multi-objectives functions of GMAW in order to find theoptimal parameters of fractional PID controller. The obtainedresults are compared with those given by fractional PIDcontroller in which our proposed method can ensure a betterdynamic behavior of the GMAWprocess.

Keywords : GMAW, MIMO system, GWO, Fractional PID controller