Abstract

Measurement of level, temperature, pressure and flow parameters are very vital in all process industries. The model for such a real time process is identified and validated. Real time industrial processes are subjected to variation in parameters and parameter perturbations, which when significant makes the system unstable. Determination or tuning of the PID parameters continues to be important as these parameters have a great influence on the stability and performance of the control system. Most of the processes are complex and nonlinear in nature resulting into their poor performance when controlled by traditional tuned PID controllers. The need for improved performance of the process has led to the development of optimal controllers. So the control engineers are on look for automatic tuning procedures. This paper discusses in detail about the Particle swarm Optimization (PSO) algorithm, an Evolutionary Computation (EC) technique, and its implementation in PID tuning for an industrial process. Compared to other conventional PID tuning methods, the result shows that better performance can be achieved with the proposed method in terms of time domain specification and performance indices.
Reference

- Krohling R, CoelhoL, ShiY. Cooperative particle swarm optimization for robust control
Tuning of a PID Controller for a Real Time Industrial Process using Particle Swarm Optimization


Index Terms

Computer Science

Evolutionary Computation
Key words

Real time system
PID

automatic tuning

evolutionary computation