

Abstract

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Realization of adaptable PID controller within an industrial automated system

This paper describes and implements an a real control technique using advanced automation technology. PID controller is one of the most controller used in industrial but it need to be adaptable in real situation in order to overcome the parameter variation and system disturbance. An adaptable PID controller based on analogical gate technique is implemented using an industrial Programmable Logic Controller (PLC) to control the temperature of a process by actuating of a three way valve. The valve distributes the hot and cooled air in order to adjust the temperature of a vessel. The system control hardware consists of first PLC as a field controller with high sampling rates, second Human Machine Interface (HMI) as a local operating and adjusting station, finally SCADA software to adjust and supervise the overall system. The process parameter estimation, simulation results and practical results are obtained and compared for system validation. A comparison between conventional and the proposed adaptable one performance is introduced, showing merits and effectiveness of proposed algorithm.