

ABSTRACT

PID controller have been widely used as the basic property of industrial control technology and also quite though for controlling a few process. However, for tuning the PID parameter it's not simple and also have a few problems in handling a slow response system, such as boiler. Therefore, the Model Driven PID (MD PID) control is designed for solving these problems, especially for plants or processes with slow response. The MD PID using the model of the plant itself as the basic model of the controller.

In this final project, the author will designed a water heater system that implemented MD PID as the controller, so the temperature value that have been set before will be acquired, and also the system will be more stable with good performance response that better than the conventional PID, especially for systems with long delay, long deadtime, and slow response. The "PT100" sensor will be used for read the temperature value and also for the feedback of the close-loop system.

The step responses have been compared and analyzed the difference between PI and MD PID controller. From the examintation, PI controller gives bit faster performance with rise time 106.4969s compared to MD PID with rise time 110.0801s. But MD PID controller gives smaller overshoot with the value 3.4°C, while PI controller gives 7.325°C.

Key Word: *Model Driven PID, Water Heater, PT100, Matlab.*