ABSTRACT

DESIGN CONTROL SYSTEM BOILER USING PID ALGORITHM ON PLC (PROGRAMMABLE LOGIC CONTROLLER) OMRON

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Boilers are used in almost all industrial processes for the heating process. Heat changing the liquid into steam. Steam from the boiler results can be used to drive the power plant turbines. Boiler heating process can use the fuel and can use electricity. Heat generated by heating the water storage drum transfered to the boiler drum to heat the water change into steam. [1] In the boiler there are three process variables that is, water level, water flow and water temperature. The water level will be controlled on the boiler drum.

In this project will be designed control systems at water level and water flow using the PLC OMRON CP1H with PID control method. Then the author will analyze its performance. [7]

From the results of tests and measurements showed that the application of PID algorithms can work on the boiler using a PLC. Obtained optimal parameters, controller P, Kp = 16.3, controller P and I, Kp = 14.7 and Ti = 19.3925, For controller PID, Kp = 19.6, Ti = 11.6, and Td = 2.9. The best response system shown by PID controller with a sampling period of 2 seconds because it fit with the desired specifications. Response system has no steady state error and produce relatively small overshoot 1.2 % , with a time delay of 15 seconds , 61 seconds rise time , the peak time 70 seconds.

Keywords: *PID, boiler, PLC OMRON CP1H, water level, water flow*