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ENVIRONMENT

AC LIGHT BULB TEMPERATURE
CONTROL FOR INCUBATOR

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Abstract

This paper aims to develop the application of a PID controller for an incubator system. The controller takes on a decision over the system temperature, to reach a set value. It deals with a design and implementation of an incubator temperature control system. This system is composed of the incubator, PID controller, microcontroller, temperature sensor, LCD display, motor driver, DC motor, dimmer switch and AC light bulbs. The incubator generates its heat by the use of AC light bulb. The incubator also has an external temperature control used by the user to set a specific temperature within the heating range. A PID controller, through a microcontroller, is used to ensure that the temperature within the incubator maintains its set value (ranging from $23^{\circ}C$ - $40^{\circ}C$) under different conditions. The circuit will also contain a display unit able to show the temperature from within the incubator and also from the set point.

The temperature inside the incubator is read using an LM35 temperature sensor. This is the actual reading for within the incubator and the temperature from the temperature control will act as the desired temperature. Hence, the difference between these two readings is used in error calculation, which in turn is fed to the PID and used to determine which corrective measure shall be taken.The entire control system has been realized in both simulation and experimental modes.