CONTROLLING HEATER FOR A PORTABLE EGG INCUBATOR

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ABSTRACT

This thesis describes the design of temperature controller of a home egg incubator. This project intends to build a system that regulates the temperature in the incubator appropriate to fowls' egg incubation process using the micro controller Peripheral Interface Controller (PIC) as the main controller. The controller will enable the regulations of suitable temperature for at least 5 types of fowls such as chicken, turkey, duck, goose, and pigeon. The incubation is to hold about 30 eggs. The temperature is controlled by the PIC dependent on the occurrence of day and hour signals from the clock of the system. The PIC generates control for temperature egg incubation. The program for the PIC is written in assembly language and then downloaded into the micro controller to operate the circuit which is built to handle the electronics of heating and temperature sensing of the incubation chamber.

In designing the incubator several incubation environments need such as humidity, correct temperature, ventilation, and egg turning need to be controlled to mimic the natural incubation by the brooding hen, to ensure successful hatching of the chicks.

However, this project only concentrates on the temperature controller. However in the design of the temperature controller other incubation environmental factors are considered, as ultimately the entire environmental control will be done by the PIC.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Incubation is the process by which the embryo within the egg develops into a fully formed fowl and has the capability of breaking free from the shell. The primary concern of environmental consideration in incubating eggs is the temperature. The Early Egyptian incubators of some 3,000 odd years ago were a series of mud brick egg ovens type rooms built each side of a central passageway all within a large mud brick building or hatchery. Temperature control was achieved via the strength of the fires, jute covers over the manholes and regular openings of vents in the roof of the ovens [1].

Natural incubation uses a broody fowl to incubate eggs by sitting on them in a nest. Artificial incubation uses an incubator to do the job of the broody fowl. The incubator closely controls temperature and relative humidity within the proper limits to hatch fowls. Artificial incubation is an excellent alternative to the broody hen.

The fundamental techniques of incubation remain the same whether for hatching millions bird per year or a dozen fowls as backyard enthusiast, which is to maintain and regulate its temperature inside the incubator [2].

This project presents a system to maintain and regulate the temperature for a portable incubator by adapting the micro controller. Software has been developed for the micro controller to read the signal from the inputs and produce suitable outputs to control the operations.