HIGHER TECHNICAL INSTITUTE

MECHANICAL ENGINEERING COURSE

DIPLOMA PROJECT

DESIGN AND CONSTRUCTION OF A SMALL LABORATORY INCUBATOR

M/970

BY: LOIZIDES CHRISTOFOROS

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Design and construction of a small laboratory incubator

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Acknowledgments

Five months have passed since this project started. Now, this project has successfully finished and of course this would not have been done without the assistance of some people that have offered their help and gave useful advice as well as their knowledge on some specific and very important subjects.

I would like to express my appreciation to my supervisor Dr. Polyvios Eleftheriou for helping me at every step of this project, as well as giving me advice until the end of it.

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Thank you all

Loizides Christoforos

June 2003

Summary

Title: Design and construction of a small laboratory incubator

Author: Loizides Christoforos

The idea of this project is to design the incubator and then construct it

Firstly, the design was made; the scaled drawings were drawn at the dimensions discussed before with my advisor.

After the design and before the construction of the incubator, the selection of the appropriate materials took place. The materials were selected according to the demands and the working conditions of the device.

The electrical components, i.e. the controller, lamps, cables element etc were connected and programmed in order to make the operation of the device as safe as possible.

The result was the construction of an incubator doing the main functions like others, suitable to work safely and able to be used as a model for investigation and improvement for better future results.

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INTRODUCTION

The aim of this project is to design and construct a small incubator for use in a laboratory environment.

The design and the final drawings should be discussed and approved by the lecturer involved. Instrumentation and expenses for the construction were to be kept minimal and care was to be taken for all the necessary safely features. Also, the results should be of high standard and good appearance.

Since the project needs a lot of components to be attached on it, a research in the market had to take place in order to find the most suitable parts at the best prices (since one of the main objectives of the project is to keep the cost of the incubator at a low price.

This of course has been a big problem because components with better quality and accuracy were expensive and unfortunately outside our budget. If better quality parts were used the result would have been better.

After the suitable components, materials and electrical parts were found, the construction took place having always in mind the safety precautions for the user of the incubator.

Incubators are machines used in laboratories mostly for growing of batteries for scientific use, for egg incubation, for plant reproduction, for acceleration of reagent reaction, for DNA analysis, etc.