

**Higher Technical Institute
MECHANICAL ENGINEERING DEPARTMENT**

DIPLOMA PROJECT

**DESIGN AND CONSTRUCTION OF A NOVEL
REFRIGERATOR**

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OF A NOVEL REFRIGERATOR**

by
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Project Report

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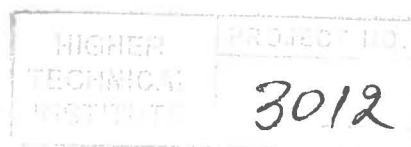
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SUMMARY

The objective of this project was to identify the problem related to servicing and repairing of commercial refrigerators, designing a novel refrigerator intended for commercial applications and constructing it. The major factor for the design and construction of this refrigerator was the ease of servicing and maintenance of it.

In the first chapter of the project, there is a brief explanation about the meaning of refrigeration and the major use of refrigeration today. Later on, is the description of how commercial refrigerators are used in Cyprus and the various problems concerning these.

In the second chapter, is the actual design of the refrigerator. The various design aspects and criteria used for the design are written down and by the use of drawings, the process of the design is shown. The final design is presented here in drawings.

In the third chapter, all the equipment used for refrigeration are specified and their details are shown later in the appendices.

In the fourth chapter, a brief description and display, by the use of photographs, of the various stages of construction the refrigerator went through.

The conclusion is a brief statement of the final form of the solution and states whether or not the objectives were accomplished or not.

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INTRODUCTION

What is refrigeration ?

Refrigeration is the science of producing and maintaining temperatures below that of the surrounding atmosphere, by the withdrawal of heat. This means the removing of the heat from substance or space to be cooled. In the above definition, a space may be the interior of a household refrigerator, a cold-storage box, an ice-cream cabinet, or any other enclosure in which a temperature is to be produced and maintained lower than the surrounding air. For thousands of years, man has used some kind of refrigeration to cool beverages and preserve food. Since the mid-1800's, refrigeration has been widely used to keep food from spoiling.

Early refrigeration was obtained by the use of ice. Ice from lakes and pools was cut and stored in the winter in insulated store-rooms for summer use. The use of natural ice required building insulated containers or iceboxes for stores, restaurants and homes. These units appeared on a large scale during the 19th century.

Ice was first made artificially about 1820 as an experiment. Not until 1834 did artificial ice manufacturing become practical. Jacob Perkins, an American engineer, invented the machine which led to our modern compression systems. Michael Faraday discovered the principles for the absorption type of refrigeration as early as 1824. It was not actually build until 1855 by German engineer.

Mechanical domestic refrigeration first appeared about 1910. J.M.Larsen produced a manually operated household machine in 1913. By 1918 Kelvinator produced the first automatic refrigerator for the American market. They sold 67 machines that year. Now millions of units are sold each year.