

HIGHER TECHNICAL INSTITUTE
MECHANICAL ENGINEERING COURSE

DIPLOMA PROJECT

DESIGN OF A CENTRAL HEATING AND
HOT WATER SERVICES FOR
A BLOCK OF PREMISES

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**DESIGN OF A CENTRAL HEATING AND HOT WATER SERVICES
FOR A BLOCK OF PREMISES**

by
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SUMMARY

The aim of this project is to design a Central Heating and Hot water supply system, for a building consisting of three floors located at Nicosia.

The name of the building is "ANGELIDES COURT" and the architectural drawings have been supplied by "CMP" architect company.

The ambient conditions, for Nicosia, were taken from the Meteorological services, while the indoor and ventilation requirements were selected from the C.I.B.S and Carrier Handbooks. Basically this project is divided into six Chapters. The first chapter is about the second chapter involves the system of the space heating, whereas the Third Chapter describes the system for the hot water supply services.

Furthermore, the Fourth chapter includes the sizing of the plant Equipment and the Fifth involves their selection from various catalogues and other important technical data.

Finally, in the last chapter the cost analysis of the whole design is described.

INTRODUCTION

The purpose of a heating system is to produce and maintain comfortable conditions in the space concerned when the outside temperature has dropped below the comfort level.

The heating system to be designed in this project should create excellent thermal comfort conditions at the internal space of all flats. To achieve this, the heat requirements of all flats must be determined so as to be able to select the appropriate equipment that will satisfy these requirements.

The local heating is the actual generation of heat in the room and it can be accomplished in various ways such as, the open fireplace, stoves, Gas-fires, electric heaters, electric convectors, electric panels, electric oil-filled radiators, electric storage heaters, paraffin convectors, etc.

On the other hand, in Central heating systems hot water, which results from the combination of a boiler and a burner, is circulated through a system of pipes and heat-emitting appliances, thus heating the space where an appliance is present. Furthermore, the circulation can be achieved either by a non-mechanical action of the thermo-syphon (Gravity Circulation) or by mechanical means using circulating pumps (Forced or Accelerated Circulation).

The system chosen to be applied in this project is the Central heating. This system will require a boiler and a burner that will consume gas oil fuel in order to heat up the water. Furthermore, the heat emitting appliances will be radiators placed at each space to be heated, and they will be connected with the boiler by means of pipes of different diameters. Finally, the hot water will be circulated in the pipes by the aid of circulating pumps.

Generally there are two systems applied for the hot water services and these are, the Direct system in which the circulating water is heated directly by the boiler, and the indirect system in which the circulating water is heated indirectly from the boiler by the aid of a coil.

The system applied in this project, since it is much more preferable to use a common boiler, is the indirect system which can be combined with the space heating system.

To conclude, apart from the fact that the system should be able to create and maintain the desired internal conditions and also to supply at all times hot water, its total cost should be kept as low as possible.

In achieving these two basic requirements, the major factor in the design of the system should be the conservation of energy.