HIGHER TECHNICAL INSTITUTE

MECHANICAL ENGINEERING DEPARTMENT

DIPLOMA PROJECT

ENERGY CONSERVATION IN A COMMERCIAL BUILDING

M/942

BY: KYRIACOS HADJIYIANNIS

JUNE 2002

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Project report

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Kyriakos Hadjiyiannis
June 2002
Nicosia, Cyprus.

INTRODUCTION

The reason that forced Government Department in recent years to look into alternative energy sources is the continuous annual increase in energy consumption, which costs a lot of money to the Government. The problem is that all this money is wasted in a way, since we could have the same quality of life, consuming less energy. The same applies to private individuals. It should be stated that the availability of existing energy sources is finite.

Unfortunately, in Cyprus the availability of energy efficient products and methods is minimal. Moreover, people do not have energy consciousness and as a result they waste a lot of energy every day. A very good example is the bad use of air-conditioners in summer. People may have the air-conditioner working all day while they have the windows open or leave it working while they are away. Another example is overuse of lighting when there is no need for it.

Because of all this energy unconsciousness, from 1991 to 2000 the energy consumption was increased by 1 508 080 kWh in all sectors. In the commercial sector, the increase was 250 409 kWh. This over consumption in the year 2000, cost £81 640 000 for the production of 3373,7 GWh to the government, in contrast to the year 1999 when the consumption was 3139,3 GWh and cost to the government £43 567 000.

In the commercial sector the consumption of energy in the last years was very high. For this reason all the new commercial buildings in the future must be energy efficient. In order to satisfy their needs for cooling, lightning, heating, ventilation and electric appliances, they must use energy saving products and methods. Last but not least, the personnel of these buildings must develop energy consciousness otherwise nothing of the above would make any difference.

OBJECTIVES

- To estimate the energy consumption pattern in the building.
- To draw up typical Sankey diagrams for the energy consumption in the building.
- To identify the areas for possible energy conservation.
- To suggest energy conservation methods and techniques.
- To estimate the cost required to establish the methods and strategies suggested.