DESIGN OF A SOLAR HOT WATER SUPPLY FOR A BLOCK OF FLATS

Project Report Submitted by:

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In Part Satisfaction Of the Award of
Diploma of Technician Engineer
In
Mechanical Engineering
Of The
Higher Technical Institute
Nicosia
Cyprus
June 1990

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Type of Project: Individual: ✓
Group:

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Summary

The objective of this project was to design a solar hot water supply system for a Block of flats located in Nicosia, Cyprus.

Firstly the daily hot water requirements of the building were calculated and the heat required for heating the water was estimated.

Secondly two types of solar collectors, the flat plate collectors and the concentrating collectors were examined in detail and in decision making the flat plate collectors were found the best choice. After the determination of the collector tilt angle and the collector efficiency the calculation of the optimum Solar Collector area was followed through a rough cost estimation taking into consideration the solar radiation and sunshine duration in Cyprus.

Thirdly the various methods and techniques currently used for the collection and storage of solar energy for water heating were studied in detail. In decision making the best solution was found to be a hot water closed system with one storage tank, an external heat exchanger and a boiler as an auxiliary heat source.

Fourthly the design of the selected solar system was performed. This includes the determination of the size and positioning of the solar collectors on the roof, the size of external heat exchanger and all the other equipment and accessories and controls involved in the selected system.

Fively the pipe sizing and pumps selection of the collection and distribution system was carried out. Detailed drawings were prepared, illustrating the system layout and components.

Finally, a cost estimation of the selected solar hot water system was carried on.

To conclude with, it should be stated that Solar energy is one of those energy sources which can be fully utilized especially in countries of high daily solar radiation such as our country Cyprus.

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