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**“DESIGN OF A DOMESTIC SOLAR  
WATER HEATING SYSTEM FOR A  
RESIDENTIAL BUILDING”**

**BY**

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**DESIGN OF A DOMESTIC SOLAR  
WATER HEATING SYSTEM FOR A  
RESIDENTIAL BUILDING**

**By**

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# INTRODUCTION

Hot water is an everyday luxury; hot water is needed for shower, kitchen sink and other water uses that come in touch with human's skin. The amount of hot water used is depending on the socio-economic conditions of a place. Producing hot water can be done in various ways using coal, electricity and other expensive ways, nowadays these ways have a big everyday increase in cost so another way should be used for this "luxury" which everyone needs. The answer comes in natural energy supplied from the sun free for all the people and in many countries in a big amount. Especially in Cyprus there are a lot of sunny days and this makes our country ideal for installing solar energy systems.

The production of sanitary hot water for domestic use or industrial applications by means of solar energy constitutes one of the most popular and economically feasible applications of flat-plate solar collectors. It is the most viable of all low temperature solar energy applications because the initial investment is small and the system is utilized throughout the year. This high use factor results in a larger load factor than any other application. As a rule of thumb it can be suggested that solar water heating may be feasible anywhere, if the annual solar radiation is  $1000 \text{ kWh/m}^2$  or more.

However, for the most efficient and cost effective utilization of solar energy in this field it is necessary to develop and design the appropriate system, select the suitable materials and equipment and size properly the components involved. This is what my project is about, thru research and using a program called RET Screen I will try to find the best way to place the collector (its slope and azimuth angles) the ideal number of solar collectors, the collectors arrangement, the capacity of the storage tank, the ideal temperature and what is better to use for supplying the extra energy needed but apart from the designing part of the project I will give a lot of information on solar hot water supply systems.