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WATER PUMP USING SOLAR ENERGY

TO BE USED IN RURAL AREAS

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INTRODUCTION

Energy shortage has become a major problem today, due to the growth consumption limit limiting the research of fossil fuel.

Deposits of oil are deficient. Hence, the best alternative source of energy will be the SUN - solar energy, with no polluting qualities and is in abundance.

The importance of solar energy today has been known to everybody in their everyday life. In ancient times, the sun provides energy for time, where there is no clocks and watches available. The sun also directs the ways during travelling. The sun-dial was invented based on the existence of the sun.

Now, scientists and engineers are making many discoveries on the importance of the sun - solar energy, such as using the solar energy to cook food, using plastic placed directly under the sun to obtain water by condensation.

In the future, the solar energy can be fully utilized with proper facilities and techniques, to accommodate the energy shortage, i.e., the shortage of oil deposits.

1.1 THE SUN AS A SOURCE OF ENERGY

The carrier of solar energy is radiation, consisting of visible light radiation, an invisible ultra-violet and infra-red radiation. Visible light has a wavelength from 0.4 l to 0.8 l. Ultra-violet is shorter than 0.4 l and infra-red longer than o.8l

where l = 1/1000 m

The radiation intensity at the sun's surface amounts to between 70 000 and 80 000 KW/m at the temperature of 6000 C. Our earth receives only a small but significant part of this amount of power namely; approximately 180 000 billion kW. This is about 180 000 times more than the amount man has up to now produced altogether on the earth.

Outside the earth's atmosphere, the flow of radiation still amounts to 1394 W/m or 2.0 cal/cm. min. This value is called the solar constant.

In passing through the atmosphere a large part of this radiation is absorbed (30 - 40%) so that the earth's surface at sea level on a clear day receives between 0.885 kW/m and 1.000 kW/m of direct radiation.

Naturally, a part (about 50%) of the diffusion of the sun's radiation in the atmosphere reaches the earth's surfaces in the form of energy. For solar engineering calculation year-long each hour of the day each month.

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