OFF-GRID/STAND ALONE AUTOMATED GARDEN SPRINKLER

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ABSTRACT

Nowadays, most of the electricity for all the country used is generated using the natural sources. These sources include wind, water, sun light and so on. In this project, the main sources are come from natural that is wind and water. The wind will blow and rotate the wind turbine. On the other hand, the water will rotate the water turbines. All these turbines will turn the dc generator and generate the output dc voltage. The project's aim is to utilize the power generated from the rotate of the turbineson the dc generatorto charge a 12V lead acid battery.

The voltage that generated out from the dc generator is not regulated. Thus, at the output of the dc generator is connected to a voltage regulator circuit. This is to regulate the output voltage to 12V. The 12V lead acid battery will be charged by the regulated output voltage using a battery charger circuit with LM317 DC-DC converter. A digital display is included to show the charging and voltage level of the 12V lead acid battery.Inside the circuit is using LM3914 bar-graph display controller together with the 10 orange bar-graph display. This bar-graph display is to show the voltage level of the lead acid battery. The 12V voltage from the lead acid battery is used to turn or operate the 12V dc water pump. Water pump is to pump the water to the sprinkler.

There are some conditions for thisproject. When there is raining day, the water pump will stop function, same to the sprinkler. There is a rain sensor to sense the appearance of water drops. When there is no more raining, the water pump and sprinkler will function again. On the other hand, the sprinkler should be function at the time set daily. To set the time and sense the water drops, all these condition can be programmed by using microcontroller, PIC 16f877A. The software used to program the PIC microcontroller is Micro C++.