

Palikir off-grid solar

School of Science and Technology Electronic and Computer Engineering

The project aims to provide a low-cost, durable, and sustainable solar-power system for off-grid villages. The solar-power system can generate a stable level and several amount of electricity. It should power different households' appliances and cope with the daily electricity consumption.

The objective of this project is to design, develop, build, deploy a solar-power system and evaluate the system's performance over time. Ta Kwu Ling will be the test site in Hong Kong within this project.

This project will carry out the following information and analysis:

Within the system, it is made of a few major components which are solar panel, charge controller, battery and inverter. These four components need to be decided based on the requirements of the off-grid village and might vary between different households.

Figure 2. Design of Whole System with all Components

Table 1. Description of Processes

Figure 3. Flow Chart of the Processes

The solar power system was going to be deployed at the position shown in Figure 4. The equipment station would be placed near the well, so it could reduce some of the cabling work. The solar panels would be installed on the iron frame in the farmland where did not have any obstacle covered the solar panels.

Figure 7. Solar Charge Controller

Lead-acid batteries were going to be used in this project. To decide the size of battery for the system, it has to concern how many watts the system needed. The range of size should be from number of watts used by the load to the daily power consumption. Therefore, there are three cases suitable for the project.

For the power generated by the two solar panels, since the average insolation duration in Hong Kong is 5 hours per day, the best case of total electricity provided is .

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