

A105 ENGR

Design of a Solar Energy System with Smart controller capable of weather prediction and acting as a virtual power plant (VPP).

Abstract

When it comes to engineering design, it is important to consider the environmental impacts that a system design will have, and in this modern society one industry can help or damage the environment, generating power. There are multiple ways on how power is generated, power from burning fossil fuels to generating power from the sun through solar panels. Generating power from burning fossil fuels can be destructive to the environment and is classified as a nonrenewable resource, which means the use of this resource is limited. Whereas, generating power from solar panels is clean and environmentally friendly. So, this project is expecting a system to be able to track the sun throughout the day, for a solar panel. Be able to output a constant voltage from a solar panel that will be used to charge a battery, which will be monitored by a smart controller that will check the input/output power to maximize the charging and discharging of the battery that will also receive weather information to plan for following day if the battery is too low, and finally connect the system to an inverter that will convert the DC signal to an AC signal that will be used to turn on main voltage devices.