

Development of a Solar-Powered Greenhouse Integrated with SMS and Web Notification Systems

Lungelihle Jafta, Nnamdi Nwulu, Eustace Dogo

Abstract: Energy for heating and cooling is among the biggest costs in greenhouse crop production. This has led to a rethink on energy-saving strategies, including the demand for solar energy as a viable renewable and sustainable choice for greenhouse farming. This chapter presents the development of a solar-powered system leveraging on internet of things and GSM technologies for sensing, controlling, and maintaining optimal climatic parameters inside a greenhouse. The proposed system is designed to automatically measure and monitor changes in temperature, humidity, soil moisture, and the light intensity. The strategy utilized in the design framework provides the user with the information of the measured parameters online and via SMS regardless of their geographical location. The chapter also incorporates a mechanism to self-regulate the climatic condition inside the greenhouse, suitable for the plant growth. Such a system can help improve the quantity and quality of crops grown in a greenhouse. Tests carried out on the system prove its effectiveness according to the design considerations.

<https://www.igi-global.com/chapter/development-of-a-solar-powered-greenhouse-integrated-with-sms-and-web-notification-systems/268045>