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A Review On Solar Energy Based Office Automation Using IoT

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***Abstract*: The object of this paper is to design an office automation system based on environmental tracking system, which can be monitored from any place. The Internet of Things has an eyesight in which the internet expressed into the real world which holds everyday objects. The proposed system refers to the online monitoring of office appliances using solar energy as a renewable energy. This monitoring is done through Arduino.**

***Keywords*: IoT, Wi-Fi, Automation, Solar panel, Arduino.**

1. Introduction

Automation is today's fact, where two or more things are being integrated every day automatically using IOT. Renewable energy is generally defined as energy that comes from natural resources which are naturally available such as sunlight, wind, rain, tides, waves and geothermal heat. Renewable energy replaces conventional energy for electricity generation. At the same time, we also have to save the office energy cost. For this, two objectives, these are energy consumption and energy generation must be considered. Also we are going to use IOT concept by using Wi-Fi module. It is an era of technology, the world is being faster and easier due to this reason our offices also be the part of it. By using smartphone, we can operate our office appliances from any part of the world. With the help of node MCU and Blynk app it's possible.

2. Literature Survey

In paper [1] 'A proposal of Smart Home Automation System Based on Renewable Energy', by A. K. Ehsanul Haque Mashik, Pranti Tawheed, Khizir Alzabir they had discussed the Research developed home automation system refer by surrounding environmental monitoring system. To demonstrate feasibility, devices such as light, switches, temperature sensor, gas sensor, water flow & level sensor and motion detector

In paper [2]'Home Automation by Integrating Solar based system with in Internet of Things', by Urvashi Narwal, Nikita had discussed this IoT allow object to be sense. In it research implemented Solar System in Home automation. To communicate within utility supply company in order to effectively balance energy generation.

In paper [3] 'Smart Home Automation using IOT- based sensing and Monitoring Platform',by Majid Alkuwari, Abdulrhman Ramadan, Yousef Ismael, Laith AI-Sughair, Adel Gastli had discussed living things with a home, home monitoring and Automation utilized .A System can be set to monitor these parameters to help maintain them within an acceptable range.

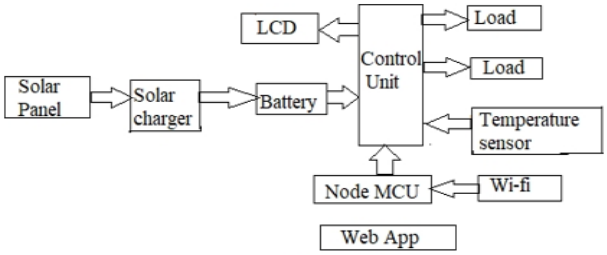

Fig. 1. Block diagram

3. Working

When sunlight spread on solar panel the solar panel generate the voltage, this voltage is not constant it is variable voltage. Then, its output is provides to the solar battery charger, which can gives constant voltage to battery and battery can save the energy and send it to system circuitry. The output voltage is given to control unit, Control unit is monitored by using microcontroller. The two relay circuit (load) is connected to control unit for ON/ OFF one Dc tube light and one Dc fan. The overall operation is basically ON/OFF tube light and fan is monitored through ESP 8266 Wi-Fi module. It works bidirectional way. The

ESP 8266 take the signal from mobile application and it provides to microcontroller to switching the Dc tube light and Dc fan through relay circuit. For run the operation of the project, turn ON Wi-Fi module after connecting the mobile to free Wi-Fi open the application and press button. The tube light and fan ON through solar energy. We can operate this system anytime anywhere.

4. System Performance

System block diagram is shown in figure 1. It contains of microcontroller, temperature sensor, ESP8266 Wi-Fi module, Battery, Node MCU, Solar panel, Dc fan and Dc tube light as load. It is a demonstration of how we have executed the project. In this system, it has two main segments i.e. energy consumption and energy generation. In energy consumption it contains office devices like fan and lights which are controlled the help of energy measurement and communication unit Wi-Fi. The Mobile device will communicate with Wi-Fi Server and Wi-Fi Server will give feedback to allow control unit for monitoring the home appliance.

5. Conclusion

As to used renewable energy source we save the energy cost. Energy consumption and Energy generation this two things are most important in this System. Hence we can conclude that the required objectives of renewable energy based home automation system using IoT have been achieved. Finally, the proposed system is better from the scalability and flexibility point of view than the previously existing home automation system.

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