

Abstract:

This paper outlines the methodology of designing and implementation of a solar powered system which can be used to make a human comfort zone during day time without using battery backup but with the use of Supercapacitors. Basically, major converter losses are reduced in this system. In acquiring a highly efficient power supply, the charge controller plays an important role. When a DC microgrid powers DC loads based on a renewable source such as a PV system; energy storage becomes mandatory due to fluctuating nature of the source. Localized DC-energy storage within DC-DC converters could address this requirement. A variation of supercapacitor assisted regulators could provide localized energy storage with low-noise and fast transient response [1]. 12 V LED lights will be powered from this system. LEDs can be powered directly via a supercapacitor bank from the regulated Photovoltaic energy. In the case of Inverter type Air Conditioner, in order to overcome converter losses, the DC Bus inside it should be accessed. Typically, DC Bus voltage inside the Variable Frequency Drive (VFD) is 1–414 times the supply voltage. Hence DC-DC Converters are used to power up the inside circuitry of the Inverter Air Conditioner from the solar panel. In order to optimize the energy usage and reduce electricity consumption, light dimming and air conditioning control systems were added to control the light intensity and switching of the air conditioner.

Published in: Industrial Electronics for Sustainable Energy Systems (IESES), 2018 IEEE International Conference on

Date of Conference: 31 Jan.-2 Feb. 2018

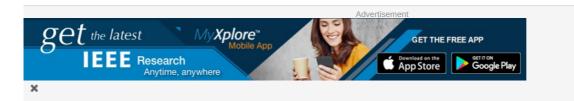
Date Added to IEEE *Xplore*: 26 April 2018

ISBN Information:

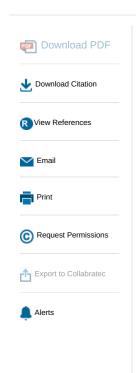
DOI: 10.1109/IESES.2018.8349901

Publisher: IEEE

Conference Location: Hamilton, New Zealand, New Zealand







I. Introduction

As the technology advances, so does the living standards, which increases the demand for power consumption. Hence new methods to harness energy from reliable sources are essential rather than relying on non-renewable and environmental pollution causing methods like burning fossil fuel. Many natural resources that are widely used to generate power today are non-renewable. In contrast, Solar Power is a source, which provides "clean and green energy" to support the power demand as an alternative energy source. Not only has it provided an environmental friendly method to harness power but also it can be used as a potential foundation for energy generation [2].







IEEE Account » Change Username/Password » Update Address

Purchase Details

- » Payment Options
- » Order History
- » View Purchased Documents

Profile Information

- » Communications Preferences
- » Profession and Education
- » Technical Interests

Need Help?

» US & Canada: +1 800 678 4333 » Worldwide: +1 732 981 0060

» Contact & Support

| Privacy & Opting Out of | Nondiscrimination Policy| Sitemap Cookies | About IEEE

| Contact Us | Help | Accessibility Use



A not-for-profit organization, IEEE is the world's largest technical professional organization dedicated to advancing technology for the benefit of humanity. © Copyright 2018 IEEE - All rights reserved. Use of this web site signifies your agreement to the terms and conditions.