

# International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

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Vol. 7, Special Issue 2, March 2018

## Low Harmonics Solar System with Current Theft Identification and Agriculture Automation Using IoT

Tamilarasan P<sup>1</sup>, Hariharan G<sup>2</sup>, Silvanus S<sup>3</sup>, Arul doss adaikalam.I<sup>4</sup>

B.E Students, Department of EEE, T.J.S Engineering College, Chennai, Tamil Nadu, India<sup>1,2,3</sup>

Assistant Professor, Department of EEE, T.J.S Engineering College, Chennai, Tamil Nadu, India<sup>4</sup>

**ABSTRACT:** Over the years the demand for power has increased In order to meet the demands the number of power plant has increased. However these plants consume large amount of fossil fuel to meet the power demands. They also produce large amount of smoke and dust which affect environment. In this project we will be using a solar panel to produce increased efficiency power for agricultural based appliaions.

**KEYWORDS:** Agriculture, Arduino, NodeMCU, Solar Planel

### I. INTRODUCTION

The converter (DC-DC1) is used to present an optimal impedance to the harvester for transferring maximum power as well as converting the input voltage to a level such that it meets the load requirements. Whereas, the second converter (DC-DC2) is used to provide a clean regulated supply to the noise sensitive analog/RF blocks. Therefore, both the input and output voltages of these converters are set differently by the system requirements. In order to implement DC-DC1, generally switched capacitor based DC-DC converters are preferred over inductive DC-DC converters, because, the integration of high-quality inductors in advance technology node is quite difficult. Moreover, in a typical mixed-signal SoC, there could be ~30 isolated power domains for combined analog and RF blocks [7]. Therefore, integration of such a huge number of inductors in a single chip is quite impossible and costly. On the other hand, in some application linear regulators (low-dropout (LDO) regulators) are preferred over switching regulator for powering noise sensitive analog blocks as shown in Fig. 1. In this architecture, as the energy is processed twice before it reaches the load circuits, the overall efficiency expected is  $\eta_{DC-DC,1} \times \eta_{DC-DC,2}$  and its typical values lies between ~65–75%. This includes power transfer losses of associated interface circuits [8], [9]. One of the key issues with this architecture is that the overall efficiency varies with ambient condition. Because the first switched capacitor DC-DC converter has a fixed voltage up-conversion ratio and its output voltage varies with ambient condition. As a result, the drop across LDO varies with ambient condition and much of the extracted power may simply be dissipated within the LDO, and hence, the overall efficiency will degrade accordingly. Another key issue is that often it utilizes two DC-DC converters even if there is sufficient ambient energy to power the load circuit. In order to address these issues, an efficient architecture has been proposed with following silent features: 1) the overall efficiency varies minimally with ambient condition, 2) unlike

### II. LITERATURE REVIEW

In 2005, Manuscript received December 7, 2016; revised May 4, 2017; accepted May 18, 2017. This work was supported by MeitY, Government of India, IITGuwahati, through the SMDP III and C2SD Projects. This paper was recommended

by Associate Editor A. Sangiovanni Vincentelli. (Corresponding author: Saroj Mondal.)

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The authors are with the Department of Electronics and Electrical Engineering, IIT Guwahati, Guwahati 781039, India (e-mail: [m.saroj@iitg.ernet.in](mailto:m.saroj@iitg.ernet.in); [roypaily@iitg.ernet.in](mailto:roypaily@iitg.ernet.in)). Color versions of one or more of the figures in this paper are available

online at <http://ieeexplore.ieee.org>.

Digital Object Identifier 10.1109/TCSI.2017.2707566 In 2000, Chun-Shien Lu, Member, IEEE, Shih-Kun Huang, Chwen-Jye Sze, and Hong-Yuan Mark Liao, publish a paper about “Cocktail Watermarking for Digital Image Protection”. A novel image protection scheme called “Cocktail Watermarking” is Proposed in this Paper. We analyze and point out the inadequacy of the modulation techniques commonly used in ordinary spread spectrum watermarking methods and the visual model-based ones. To resolve the inadequacy, two watermarks which play complementary roles are simultaneously embedded into a host image.

In 1999, Fabien A. P. Petitcolas, Ross J. Anderson, and Markus G. Kuhn published a paper about “Information Hiding—A Survey”. Information-hiding techniques have recently become important in a number of application areas. Digital audio, video, and pictures are increasingly furnished with distinguishing but imperceptible marks, which may contain a hidden copyright notice or serial number or even help to prevent unauthorized copying directly. Military communications systems make increasing use of traffic security techniques which, rather than merely concealing the content of a message using encryption, seek to conceal its sender, its receiver, or its very existence.

### III. PROPOSED SYSTEM

Photovoltaic (PV) energy has been widely interested today because it is clean and endless energy without causing pollution. To produce electricity from solar energy, it would be required an inverter to convert the direct current into alternating current. If someone is consuming current illegally or without any proper notice then the electricity board will be intimated about this issue. Furthermore addition is including automated irrigating system in agriculture. Here we will be obtaining the weather reports from a reliable open source web site and based on that we will be irrigating the field.

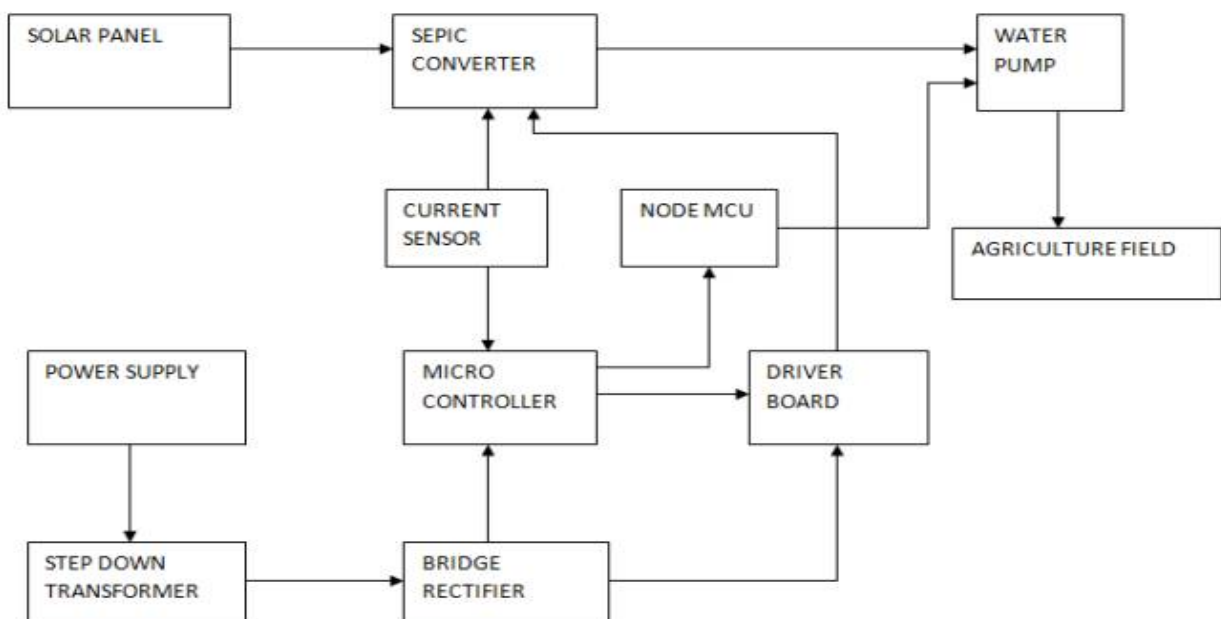


Fig.1

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## SOFTWARE IMPLEMENTATION

Arduino is an open source microcontroller which can be easily programmed, erased and reprogrammed at any instant of time. Introduced in 2005 the Arduino platform was designed to provide an inexpensive and easy way for hobbyists, students and professionals to create devices that interact with their environment using sensors and actuators. Based on simple microcontroller boards, it is an open source computing platform that is used for constructing and programming electronic devices. It is also capable of acting as a mini computer just like other microcontrollers by taking inputs and controlling the outputs for a variety of electronics devices.

It is also capable of receiving and sending information over the internet with the help of various Arduino shields, which are discussed in this paper. Arduino uses a hardware known as the Arduino development board and software for developing the code known as the Arduino IDE (Integrated Development Environment). Built up with the 8-bit Atmel AVR microcontroller's that are manufactured by Atmel or a 32-bit Atmel ARM, these microcontrollers can be programmed easily using the C or C++ language in the Arduino IDE. Unlike the other microcontroller boards in India, the Arduino boards entered the electronic market only a couple of years ago, and were restricted to small scale projects only.

People associated with electronics are now gradually coming up and accepting the role of Arduino for their own projects. This development board can also be used to burn (upload) a new code to the board by simply using a USB cable to upload. The Arduino IDE provides a simplified integrated platform which can run on regular personal computers and allows users to write programs for Arduino using C or C++.

The program code written for Arduino is known as a sketch. The software used for developing such sketches for an Arduino is commonly known as the Arduino IDE. This IDE contains the following parts in it:

- Text editor: This is where the simplified code can be written using a simplified version of C++ programming language.
- Message area: It displays error and also gives a feedback on saving and exporting the code.
- Text: The console displays text output by the Arduino environment including complete error messages and other
- Console Toolbar: This toolbar contains various buttons like Verify, Upload, New, Open, Save and Serial Monitor. On the bottom right hand corner of the window there displays the Development Board and the Serial Port in use.

## IV. RESULTS

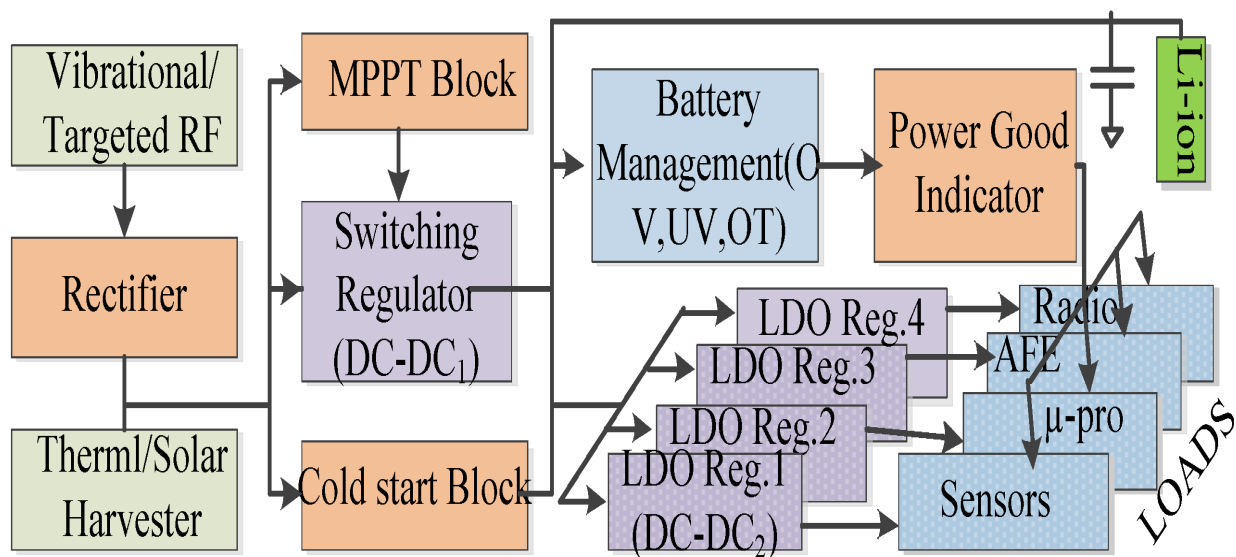


Fig.2

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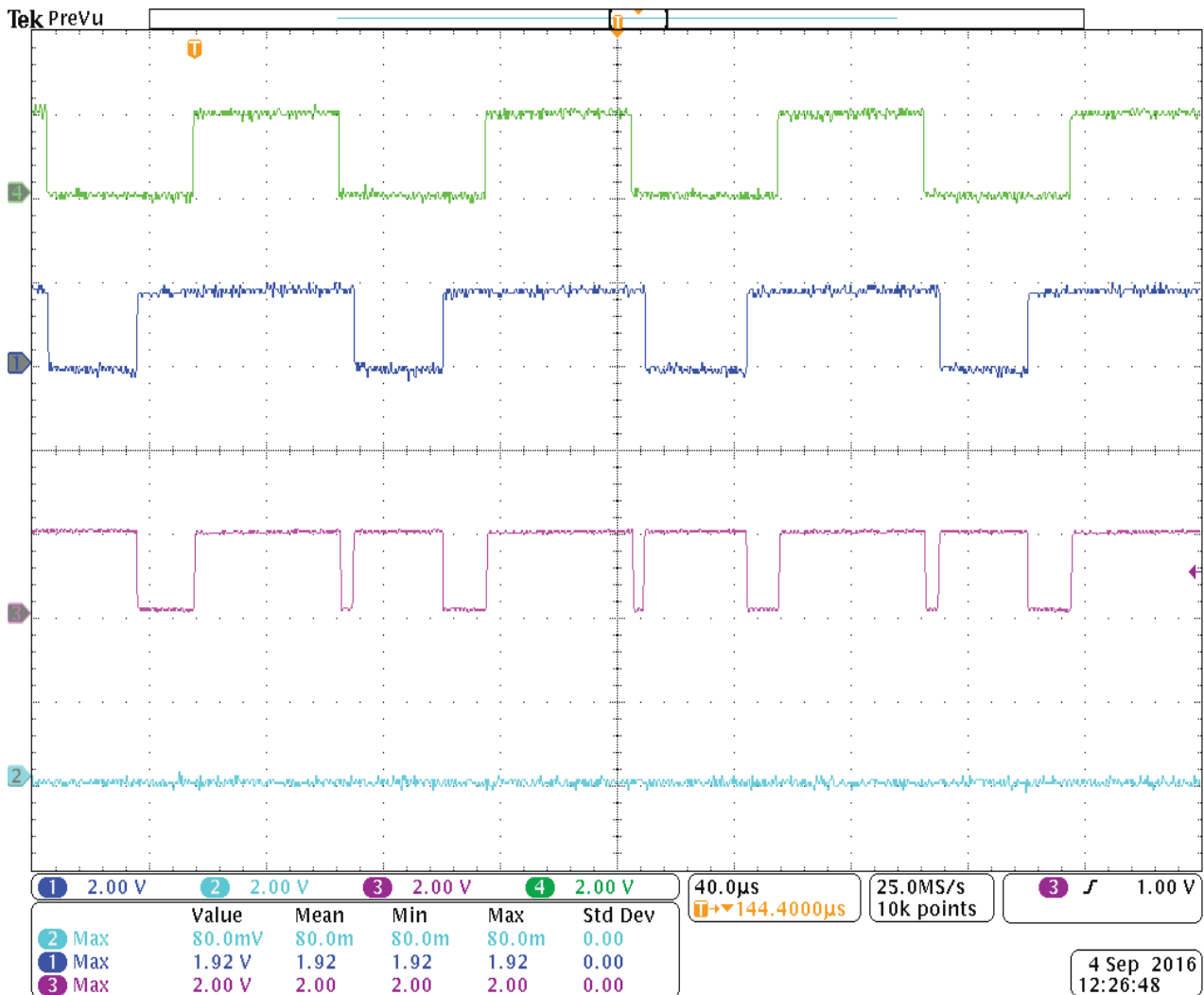


Fig.3

## V. CONCLUSION

In this project we will be increasing the over all efficiency of the power and boost them by using a single ended primary induction converter(SEPIC).With the help of current sensor we will be identifying the current theft and intimate this issue to the concerned authority.By including IoT we will obtain the weather reports and based on the weather reports we will irrigate the field

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