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HYBRID SOLAR POWER PHASE 230V AC INVERTER WITH STAND ALONE AND GRID CONNECTED SYSTEM

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Abstract:
The paper aims to develop photovoltaic systems, from solar panels to microgrid applications. The required system can provide security by providing unmatched performance for critical load, unmatched performance and seamless switching between stand-alone mode and the network connection system. To reduce the impact of required generation and load scattering, a sophisticated 20 kWh lithium-ion battery is used to adjust the system's power consumption. This book provides an overview of hardware, system management, and system diagnostics.
Keyword: Control Circuit, Hybrid solar inverter,MOSFET,Solar Power Phase

1. INTRODUCTION

It is basically a repetitive push inverter that uses energy to power the electrical device, fully charges the batteries with the solar cell and stores the energy in the battery with a power supply and uses the inverter circuit in the circuit.
In this project contains

I. 2nchannelpowerMOSFET
II. Center tap transformer
III. MOSFET driving circuit, it is used to generate GATE pulse of frequency 50Hz, using IC's 555 Timer, IC 4017 decade counter, ICLM 324, CD4011 NAND GATEI

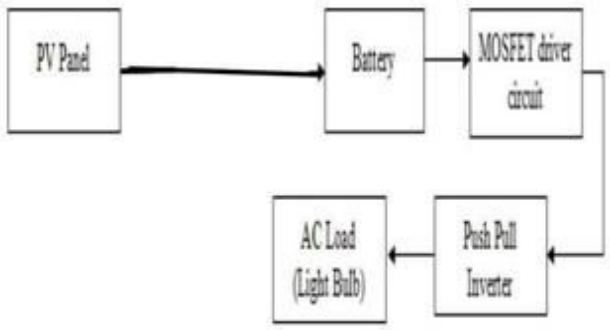

Fig. 1: Block diagram representation of Hybrid solar power inverter

2. PURPOSE OF PAPER

It is basically a push pull inverter which is use to power the AC appliances during power failure the battery is continuously charge with the solar panel and the stored power in battery is converted into AC voltage with the help of inverter circuit.

3. LITERATURE OVERVIEW

A solar converter, or PV converter, converts a variable voltage (DC) into a solar cell (PV) that is powered by electricity (AC) that can be connected to a network or to a community -eji. grid. It is an important part of the lighting system that allows the use of standard equipment. The generator has a special design designed for use in photovoltaic systems, where it is considered the most electric field and protective against the island.

4. WORKING OF CONTROL CIRCUIT

In this industry, batteries are used or assembled. Solar cell and battery levels are selected so that control panel levels can be added to improve the performance of the solar system. The simple breaker was originally designed using 2/4/6 IRF 150 bt MOSFETs to test system performance with a 150 W, 230 V near-square inverter for compatibility with 9V-0-9V / 240V, 50 Hz connected transformers reduce as shown in Figure 2. The transmission system is powered to and from two MOSFETs by the signal circuit in Figure 9. because the 12 V 50Hz AC core of RMS square wave is about 9 V 50 Hz AC In standby mode , the power state is available even if there is no solar energy to store energy stored during the day. Synchronization mode power can be restored via the Internet to reduce electricity bills through a network connection. Solar energy is controlled to respond to the grid by controlling the phase change of the control circuit and the pulse width of the gate pulse. This dataset is shown in Figure 6 and is well tested.

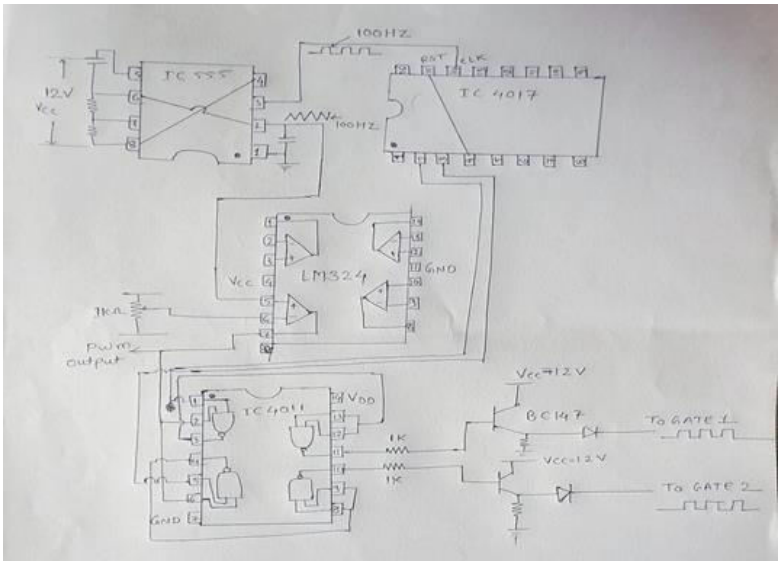

Fig.2 Control circuit of solar power inverter with stand alone mode

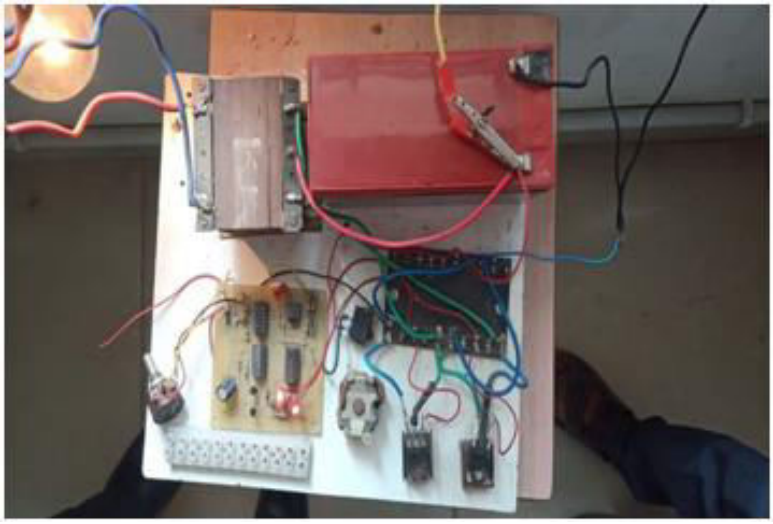

Fig.3 Hybrid solar inverter

5. **Fundamental implementation**

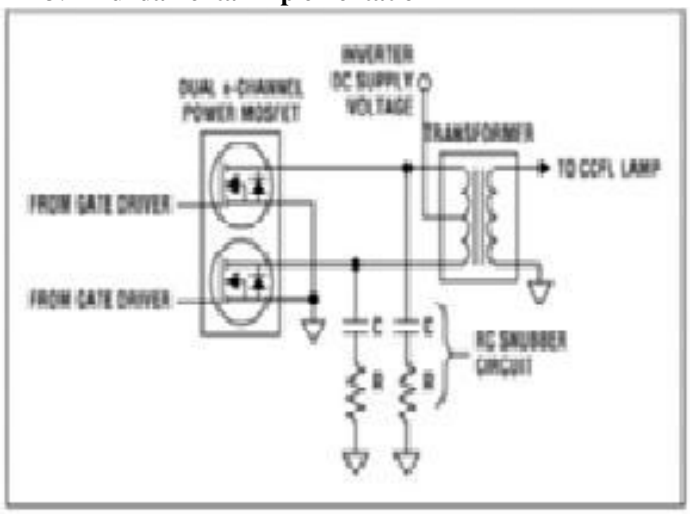

Fig.4 Power Circuit for Push Pull Inverter

The transfer system is presented and transferred MOSFETs in a different way to the control line shown in Figure 3. The reason for choosing a 9V-0-9V AC low voltage power supply is because the main part of the RMS 12 Volt 50 Hz AC frequency range .bb. 9V50 Hz.AC.

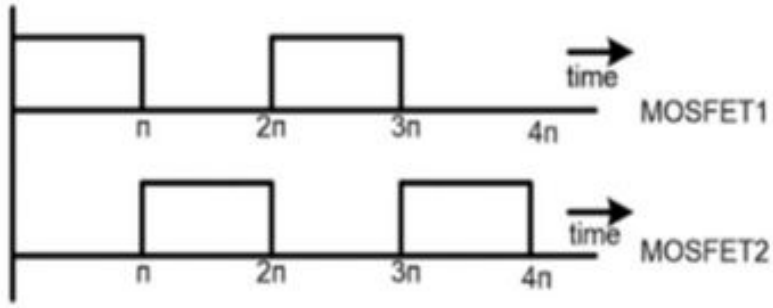

Fig.5 Gate Trigger Pulses for MOSFET 1 MOSFFET 2

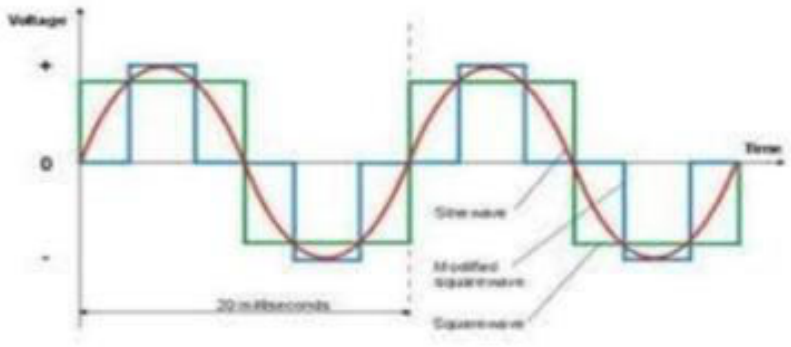

Fig.6 Line synchronized Gate Trigger pulse for MOSFATE 1 and MOSFATE 2 for Grid Connected Rooftop System and 230V AC Quasi square wave output voltage waveform

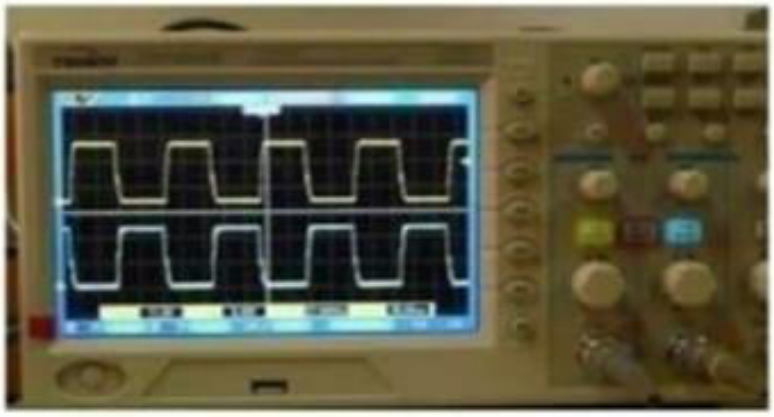

Fig.7 108 ° phase shifted Line Synchronized Gate pulse for Grid connected mode for Roof top system

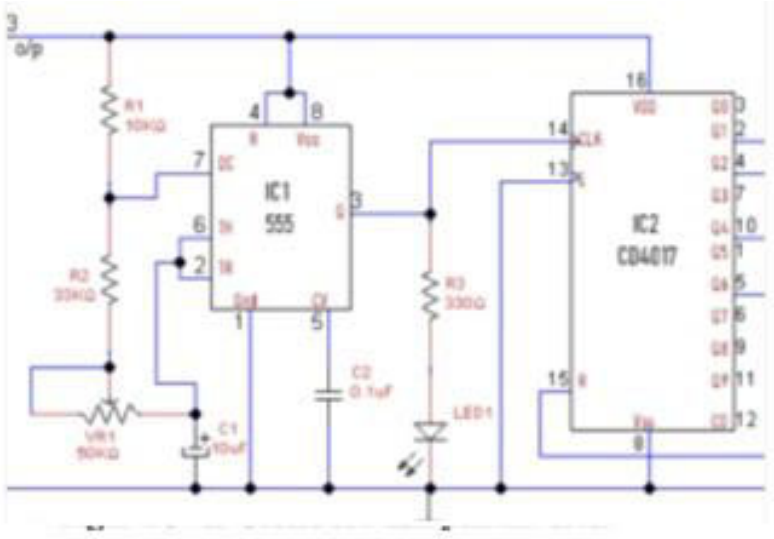

Fig.8 Frequency Divider Circuit

Fig.9 Prototype model of Solar power Single phase 230V AC inverter with facility for stand alone and Grid connected system

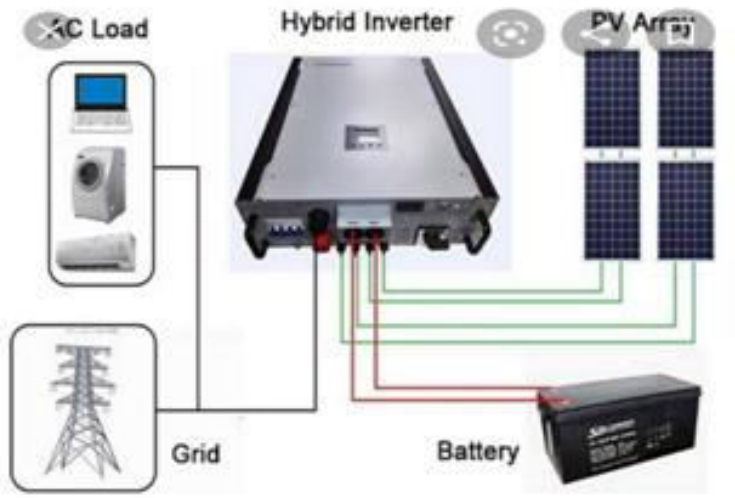

Fig.10 Implementation Diagram

555 is used in continuous multivibrator mode. Time 555 is used to create a 100 Hz clock, the value of the capacitor is about 1 micro-field. At 3 pins in IC 555 we produce a 100 Hz clock. On pins 2 555, a triangle shape at 100 Hz is used for PWM (Pulse Width Modulation). Rotation of the clock slot on pin 3 with IC 4017 adds pin number 14.

Conclusion

Photovoltaic energy is becoming increasingly important as a renewable energy source due to its many possibilities. These benefits include a stable, non-polluting power generation system, easy maintenance, and the use of direct sun lubrication for electrical changes. The high cost of PV structures remains a barrier to this technology. In addition, the production performance of the PV panel varies according to the weather, such as the level of insulation and the temperature of the cell. The descriptive design of the system gives the result of the project. The inverter is powered by a power supply. The project described is valuable in terms of promising potential, both in terms of long-term economic benefits and important environmental benefits. This work will be one of the few efforts and contributions in the Arab world in the field of renewable energy where such projects can be implemented in many places. With the increasing development of solar battery technology, such projects add value and need more attention and support.

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