Direct Ac -To-Ac Converter For Lighting Application

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Abstract- This Paper bounces a new technique which includes a control method that gives us a converter from direct current to direct current and resonant circuits are in series. This phase shift converter can convert Ac input power into frequency is high AC output. This system does not include any DC stages. To achieve an aim need to detect Ac to Ac boost resonant converter has been proposed. A current switching continuation has been proposed. Current switching continuation of phase shift control has been defined as a periodical of capacitor voltage in every half of the bridge converter. This near phase shift control is confirmed theoretically and this has been checked experimentally with the help of super junction which is power Mosfet switching. This outcome is more widely accepted with the systematic and proves the possibility for the new converter which helps in lightning.

Keywords- Direct AC to AC Conversion, high frequency in vectors, phase-shift control, synchronous rectification, zero voltage switching.

I. INTRODUCTION

Frequency is high inverters are more predominantly used for various applications in lightning. To minimize the switching high-frequency inverters are power less[1] there are several soft switching techniques has put in and so this will ensure the configuration of high-frequency switching operations. In addition to that minimizing sure voltage and spike current loose in switching power are by using the inverters which have a eseriesor parallel-resonant load to switcher o voltage and zero current.

Induction heaters use a traditional high-frequency power supply which comprises a front-end diode with a power factor adjustment circuit, an electr a capacitor, and frequency is the high resonant inverter. By using this type of arrangement, it can minimize[2] the Acoustic noises and vibrations which are produced during the operation. This type of configuration is largely used in various applications.
The trend nowadays research is that induction heater ware king on a short film capacitor as a filter for dc link. This is an alternative to electrolytic capacitors. This type of configuration will express the input has a power factor of one

AC main current. This will minimize the losses of power due to by the FC circuits a also can also cope without the use of PFC circuits. Fluctuating output power is produced by this type of operation. Melting applications in industrial heaters will not experience this fluctuation.

Correspondingly, a high-frequency inverter with a front-end diode rectifier will cause the loss of dominant power. Thus, to overcome this issue, more integrating the front-end diode rectifier with a high-frequency inverter has been proposed has a circuit topo

Further, to minimize the switching power losses and the on-state power losses, new power semiconductor devices which are introduced accordingly for this purpose.[4] To minimize the on-state power losses, super-junction MOSFETs are used. This Super-junction MOSFETs are efficient device, which ensuresery low on-with a reasonably the breakdown voltage is relatively high state resistance. Considerably, this case, the total power loss is very low which is less than or equal to the on-state power loss. This is achieved by the high-frequency resonant inverter using MOFSETs. The state resistance is predicted to be quite modest. In high frequency[5] power supplies, the diode rectifier will put the dominant power losses.

Due to this reason, to shut off the loss of power at high frequencies .The main input of the power supply is converted from AC to DC ,the high-frequency output, the bridge fewers circuit topologies or direct AC TO AC converters which is discussed and commonly used for this purposes. The converter for direct ac to ac are Matrix converters[6],using two half bridge inverters, switces ausingan amalgamation of both uniface and biface switches. .According to this, the bidirectional power switching which consists of the MOSFETs SETs, when they are connected in reverse order it is anti-series, possess high concerns about power outages surge in the state. As a rt of, higher on-state resistance and inductance which has stray in the biface witch respectively

In high frequency power supply and photovoltaic inverter, the direct two half bridge converters make up an ac to ac converter are applied efficiently[8].The applications to induction heaters and ac-dc converters are noted in the

references respectively. By the use of zero voltage switching action and direct power conversion, the converter shows the relatively high maximum power convertion efficieny. The body diode in the MOFSETs incures certain power loss. This is mainly the reason in which the drop in voltage will be forwarded when the converter does not employ rectification will be synchronous is not used for converter ,the forward voltage drop is significant. The use of synchronous rectifier technique has been described .

This report shows the direct ac to ac converter is made up of ,two half bridge converters is the new control way to inhere both switching to zero voltage, in addition synchronous rectification. The change in appearance, angel and the operating frequency of gate signals of two partial briges are adjusted by switching sequence. This report priorly says switching sequence ,only two switching modes are used, followed by their fundamental operation. . On the basis of this analysis, to regulate the capacitor voltage the new switching sequence is used. Therefore, this shows that the proposed switching sequence demonstrate a high level of power conversion efficiency.

II. SWITCHING MODES AND OPERATIONS
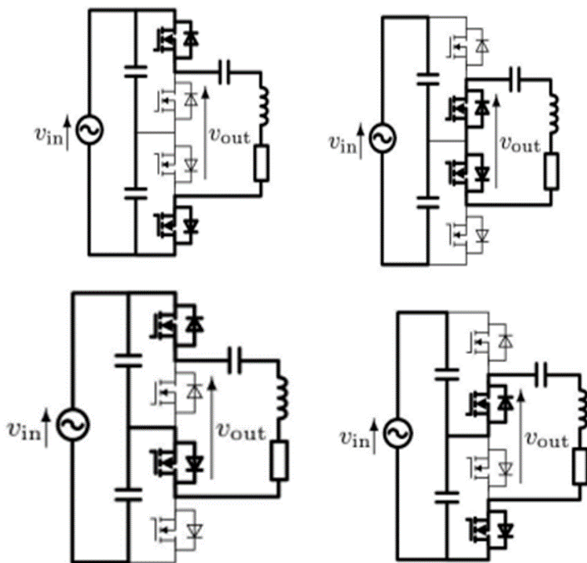
MODES OF A,B,C,D

FOUR MODES	R_1	R_1'	R_2	R_2	V out
A mode	Activate	Disconnect	Disconnect	Activate	V_{in}
B mode	Disconnect	Activate	Activate	Disconnect	Zero
C mode	Activate	Disconnect	Activate	Disconnect	V c1
D mode	Disconnect	Activate	Disconnect	Activate	-V c21

This Modes shows us four options mode: A mode, B mode, C mode, D Modes and list gives , sum up of gate signals and output voltage Vout. Because of the simple manner, modes keep out the ripple factor which is switching mode that has been connected with the main ac which losses very small amount of snubber circuit capacitors are in parallel. The input current Iin added to resonant circuit of output Iout the path will be highlighted in bold lines of modes. Added up to this it assumes a (vin>0) where the input voltage is greater than zero so it been positive. This is because of configuration and operation in modes ,The polarization of input voltage is same.

The average value switch cycle is as follows:

$$2\sqrt{2}V_{in}\cos\pi_r/\pi^2 Z_r \sin wt + \sqrt{2}V_{in}w_{in}C/2 \cos wt$$

The right side of the starting term is in phase with each other and the term second indicates reactive power.

SWITCHING SEQUENCE:

Mode A and Mode B:

Simple sequences in switches that can be easily done in mode

A and mode B
        R1 = R2 = 1
        R1 = R2 = 0

These are the switching functions.

Mode C and Mode D:
        R1 = 1, R2 = 0
   R1 = 0,R2 = 1

III. CIRCUIT DIAGRAM

The AC source comes from a step down transformer, which is fed into an AC to AC converter. It consists of four switches and two capacitors, with the output connected to a resistive load for high frequency induction heating, which is critical. To trigger the mosfet in an AC to AC converter, a controller is used. The pic microcontroller provides 5 volts to the mosfet, which requires a minimum of 12 volts. The gate driver that is driving the circuit has 12 volts, and it is now connected to the gate of the mosfet AC to AC converter for high frequency.
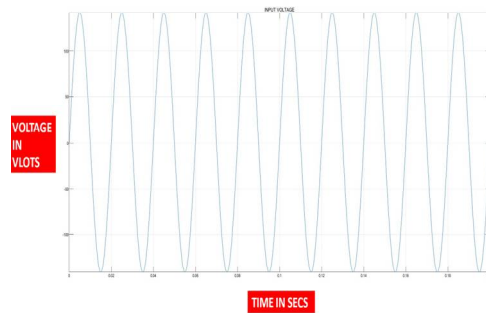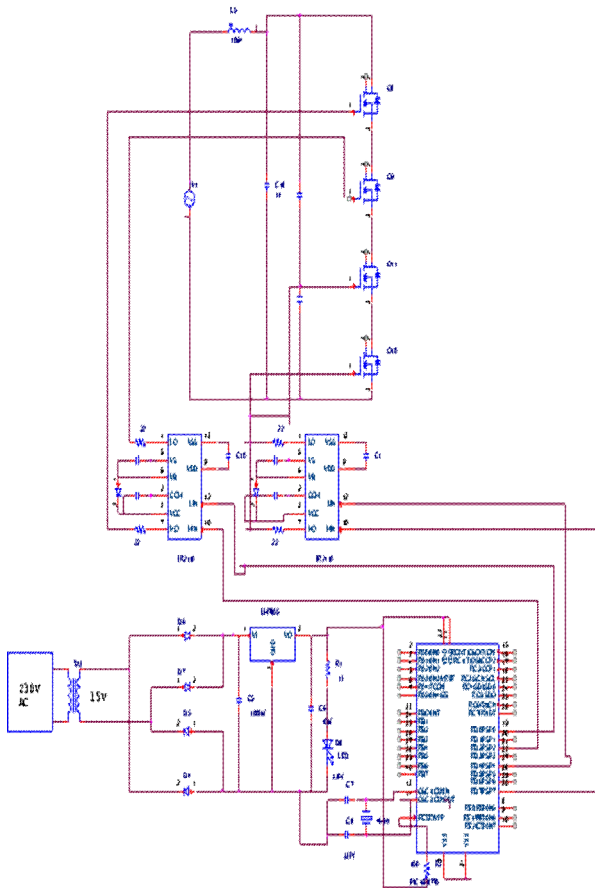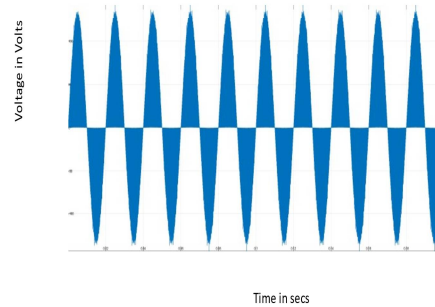
**AC TO DC CONVERTER SIMULATION:**
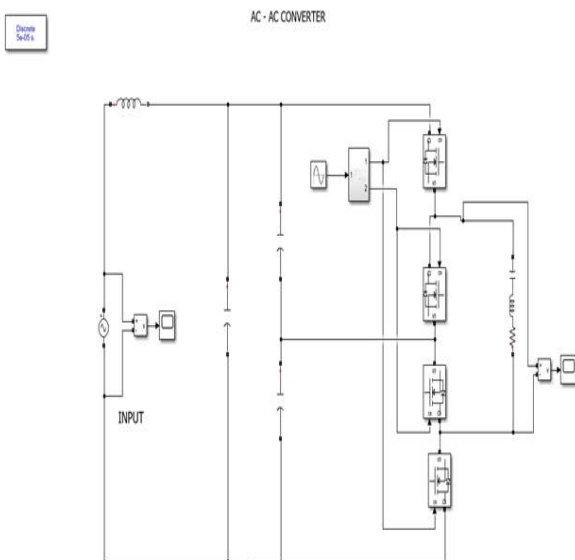
INPUT WAVEFORM

OUTPUT WAVEFORM:

HARDWARE:

The pic microcontroller is used in this system which is PIC16F877A microcontroller. This microcontroller consists of 40 pins. The pic microcontroller is used to generate the pulse output of the system. The pins 19,21,28,30 is used to get the output of the system.

The Gate driver is used to generate the pulse input. Each gate driver consists of 14 pins and it will generate two inputs. The pin 12 and 10 are used as pulsating input pins. In this circuit two gate driver is present, so it will generate four Inputs.
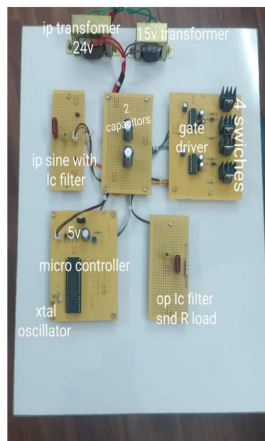
IV. CONCLUSION

A newly Ac to Ac converter has been applied to the lightning converter. An systematic checking is done to achieve equation and switching mode of operations for the converters. In Experimental Mosfet at giving connections to the load with the help of capacitors. In this paper a converter which can be operated among the voltage switches which is zero when both the on and off connections. This proposed system adjust the angle which has been phase shift and two half of the bridge converter which instructs the capacitor having voltages at reasonable one. The relation among capacitor which has voltages added to the phase shift of the angle has been checked and the development of the theory which is agreed to results. Added to this newly sequences in switching may increase the power conversion effectively.

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