FACULTY OF ELECTRICAL ENGINEERING
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FINAL PROJECT OF DIPLOMA PROJECT

DEVELOPMENT OF A PURE SINUSOIDAL SINGLE PHASE INVERTER

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ABSTRACT

Dc-to-ac converters are known as inverter. The function of an inverter is to change a dc input voltage into a symmetric ac output voltage of desired magnitude and frequency. A variable output voltage can be obtained by varying the input dc voltage and maintaining the gain of the inverter constant.

In this project, a pure sinusoidal single phase inverter was designed. This inverter takes 12 volt d.c and steps it up to 240 volt a.c. The output voltage waveform should be sinusoidal. However, the waveform of this inverter are nonsinusoidal and contain certain harmonics. We also used centre tapped transformer that step up the voltage to 240V ac.

In the modifying process, we included a fuse at the output of the voltage. So it be more safety. We also included a bulb at the output that will easier to us to make sure there is no damage in our circuit.

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Inverter circuit's circuits supply AC voltage or current to a load from a DC supply. A DC source, often obtained from an AC-DC rectifier, is converted into an AC source of some frequency. A uninterruptible AC supply is an example where the 50Hz AC power output from the inverter replaces the 50Hz AC mains supply when the latter is lost due to a fault condition .Solar power is sometimes stored in batteries for use at night or when sunshine is not available .Most sizeable machines used in the industry are AC motors, So control of these motors is normally by supplying such motors with a sinusoidal AC supply which is variable in magnitude and frequency by the inverter. Naturally commutated inverters, which were discussed earlier, are capable of converting DC into it AC but these are based on phase controlled thrusters converter. The existence of an ac supply system is crucial to the operation of such inverters since the ac supply system is relied upon in the turning off the switching devices, in other words, such inverters can not operate stand-alone. There exists a class of inverters, the load commutated inverters, which employ naturally commutated switching devices. In these applications the load itself makes available voltages which can reverse bias the thrusters and turn these off naturally over the range of operation of the load. Examples of such loads which operate with a leading power factor. These inverters can not operate on zero loads as the control circuit is synchronized with voltages in the load.