

HIGHER TECHNICAL INSTITUTE
ELECTRICAL ENGINEERING DEPARTMENT

DIPLOMA PROJECT

**DEVELOPMENT OF A
POWER INVERTER 750W**

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INTRODUCTION

This project, which is entitled synchronous power inverter, is a device converting DC power into AC power, used for feeding domestic or even industrial premises.

The project is divided into circuits which are the inverter circuit, monitoring the voltage of the batteries circuit, charger circuit and oscillator circuit.

The oscillator circuit is a simple design which achieves the DC to AC inverter to have an output frequency equal with the mains. It also provides the necessary control signals for the triggering of the power transistors in order to switch the power transistors in a desirable rate corresponding to the desirable frequency.

The inverter circuit, which is the most important circuit in this project, was designed to be simple, efficient and economic. The power transistors dominance in power conversion systems is due to excellent performance in systems where fast, automatic static switching is required since it provides efficient and reliable operation.

The charger circuit charges the batteries from which the DC power is taken. In this project we have used the mains as a source for the charging. Solar or wind energy can be used in parallel for charging the batteries. This depends on the application of the project.

The circuit which monitors the voltage of the batteries can monitor the voltage of two batteries simultaneously and when the voltage of either of the batteries is below a reference value, we have an indication.

The DC to AC inverter has several applications. It can be used at caravans where AC power normally does not exist, at houses where in combination of the inverter with solar or wind energy, AC power is provided or even in case of failure of the mains the inverter can be used to provide the needed power for several hours (UPS). Generally, we can say that the DC to AC inverter can be used where AC power is needed and does not exist and where the mains fail to respond.

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