SINGLE PHASE TRANSISTOR INVERTER

by

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Project Report

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ABSTRACT

This project deals with the use of solar energy as a source at producing single phase A.C Current.

The requirements of this project are:

(i) To design, construct and test a Single Phase Transistor Inverter.

(ii) To power the Inverter from Solar Panels.

(iii) To use the Inverter with a photocell to control an incandescent lamp.

SUMMARY

The main objective of this "Single Phase Transistor Inverter" is to power an incandescent lamp by the use of photovoltaic cells and storage equipment.

Since the inverter under investigation requires high current capacity the storage equipment and the solar panels should be capable of this current demand. Furthermore the storage equipment must be capable to sustain large number of charging and discharging cycles. Therefore before proceeding, both the solar panels and the storage equipment should be examined in detail. Another important factor which has to be taken into consideration as far as the capacity of the inverter is concerned, is the current rating of the switching elements used. More current supplied to the primary of the centre tap transformer would result to higher output power. In this particular case the switching elements used are power transistors. Transistors are used because there is no need for commutation circuits as the Thyristors require.

As it is mentioned before centre tap transformer is used for stepping up the voltage. We are bound to use this kind of inverter since the bridge inverter necessitates at least four switching devices. As a result the inverter is cheaper and more easy to construct.

Taking into consideration the points listed above it can be easily concluded that solar energy can replace most of the conventional resources since the production of electricity is free running and only capital costs are necessary.

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