

SUN TRACKING AND SOLAR CHARGING  
OF BATTERIES SYSTEM

Project Report Submitted by  
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## C O N T E N T S

ACKNOWLEDGEMENTS

PREFACE

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INTRODUCTION

### CHAPTER 1 - Environmental source of Energy -SUN

Introduction

Block diagrams

- 1.1.1 A little about sunlight.
- 1.1.2 Energy, power & power Density.
- 1.1.3 How much energy from sunlight.
- 1.1.4 Electricity - From sunshine principles.
- 1.1.5 How much energy does the sun give us.
- 1.1.6 Solar energy Recovery.
- 1.2 Tracking the sun.
- 1.4 Mechanical construction of the system - photographs.

### CHAPTER 2 - Storage Batteries

- 2.1 Fundamentals of the storage battery.
- 2.2 Definition and chemistry of the storage battery.
- 2.3 Classification of storage Batteries.
- 2.4 Grouping of cells and Batteries
- 2.5 Charging methods.
- 2.6 Trickle charging.
- 2.7 Alkaline Batteries.
- 2.8 Chemical Reactions.
- 2.9 Characteristics of Nickel - alkaline batteries.

## CHAPTER 3 - APPLICATION OF SOLAR CELLS

3.1 Look for equipment which can be powered by combination of solar cells and rechargeable, batteries.

## CHAPTER 4 - Circuit Description

- 4.1 Solar Cells.
- 4.2 Light Dependent Resistor - ORP12
- 4.3 Silicon controlled Rectifier - SCR
- 4.4 Basic silicon controlled Rectifier (SCR) operation.
- 4.5 Thyristor Circuit.
- 4.6 Transistors used in the circuit.
- 4.7 Relays used in the circuit of sun tracking system.
- 4.8 Stabilizer circuit supplying 12V.

## CHAPTER 5 - Solar Battery Panel

- 5.1 Solar cells Panel configuration
- 5.2 The complete system.

## CHAPTER 6 - Determination of cost, availability and Reliability of components.

- 6.1 Cost for tracking system.
- 6.2 Solar charging of battery - Control circuit costing and comments.
- 6.3 Observation during final Testing and comment on how Economically effective the system is.

Conclusions

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## ABSTRACT

This Diploma work appointed by the Higher Technical Institute deals with the design, construction and testing of a system for the continuous tracking of the sun carrying a solar cells panel; for the purpose of converting the sunlight into electrical energy and finally this energy to be stored in batteries.

The study made is such that to allow any future attempt, tried by anybody to be executed in a perfect way. Reference about the operation of the system is only given to the sample constructed. Of course if there is a considerable budget the same principle can be applied for an expensive type of such kind of system since a larger number of solar cells will be required as well as much more quantity of raw materials may be used.

A study finally is being made giving an analysis of cost, availability and reliability of components used in this project.