



## **Dedication**

This project is dedicated to our beloved parents for being role models for us, and our brothers and friends for their encouragement and support to achieve my goals.

## Declaration

We thus declare that this final year project report is a result of our original work except for references and quotations which have been duly acknowledged. We also declare here that it has not been previously and concurrently submitted by any other for any other degree or award at Bahria University or any other education institutions.

## Abstract

The technology for solar battery charge controllers has undergone great advancements in the past few seasons. The most emerging new technology is PWM algorithmic charging technique, which gained popularity increasingly. Charging of battery with solar panels is an exceptional and arduous challenge now a day. In the old days, simple on-off switches were used manually to limiter the battery from overvoltage and overheating, when the solar panel produced excess energy in that time. However, as this energy system advanced it became cleared that how these simple switching devices interfered in the charging process. The history of on off switches has been early battery failures before the full charging, increasing in auto load disconnection, and growing use dissatisfaction. Pulse Width Modulation has recently prolonged technology and it significantly advance in sun power battery charging system.

This type of solar chargers use the PWM technique which has similarity with all other battery chargers. When a battery voltage will reach its highest level then the regulation process will start. The PWM technique slowly reduces the voltage coming from the panel to avoid the heating and overcharging of the battery. The charging process continues to attain maximum amount of energy to the battery in the short interval of time. The result conducted is the full charging with effectiveness, rapidness recharging, and a full limit Dry cell life.

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### List of Abbreviations

PWM	Pulse Width Modulation
DC	Direct Current
AC	Alternating Current
MOSFET	Metal Oxide Semiconductor Field Effect Transistor
SOC	State of Charge
NiCad	Nickel Cadmium
ADC	Analog to Digital Converter
DAC	Digital to Analog Converter
PID	Proportional integral Derivative
LED	Light Emitting Diode
PV	Photo Voltaic (Solar Penal Array)
LCD	Liquid Cristal Display
MPPT	Maximum Power Point Tracking