SOLAR COOKING SOLUTION FOR URBAN HOUSEHOLD

An Engineering Project in Community Service

Final Report

Submitted by

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in partial fulfillment of the requirements for the degree of

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Bonafide Certificate

Certified that this project report titled **"SOLAR COOKING SOLUTION FOR URBAN HOUSEHOLD"** is the bonafide work of "Anuradha Tiwari – 19BEE10030"

who carried out the project work under my supervision.

This project report (Final report) is submitted for the Project Viva-Voce examination held on ……..

Supervisor

Dr. Avirup das

Comments & Signature (Reviewer 1)

Comments &Signature (Reviewer 2)

ABSTRACT:

This project aims to design and build a solar cooking solution for urban household top supplemented by the main power using half bridge topology and solar panel Gimbal system based on gyroscope design and we are using hemispherical design.

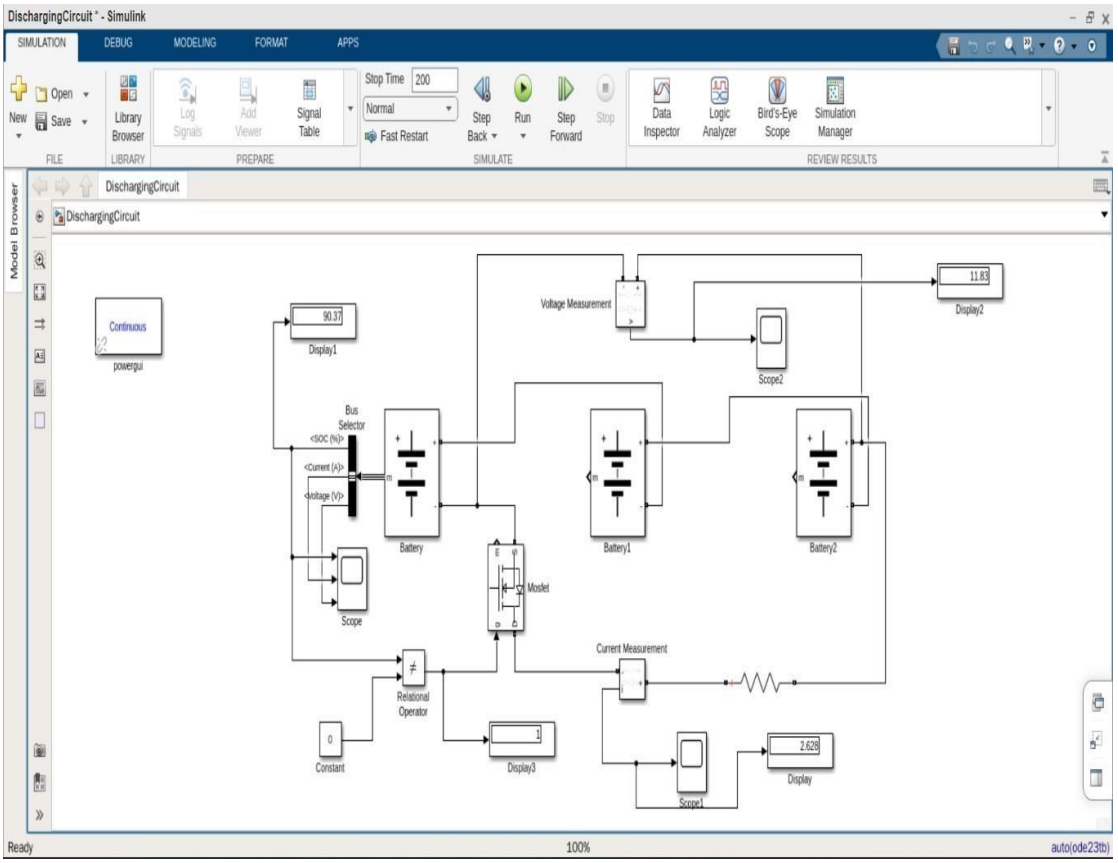
INTRODUCTION: Its better to cook through electricity rather than using biomass.It is clean it is easy to use.Now a days only few people are using solar technology for cooking.Thats why we are making solar cooker using induction to increase its use among people.

CONTRIBUTIONS:

Firstly, I worked on the battery charger circuit simulations and calculations of battery backuptime i.e, how to improve battery backup time and also done the battery management system , and then worked on complete circuit simulation part.

Topic of the work:

Circuit Simulation



Whole circuit simulation

Our circuit is a BMS circuit(Battery Management system) it comprises of lithium-ion battery pack having three lithium-ion cells,load resistance and MOSFET, relational operator etc.

All three batteries are connected in series with load resistance.And when the cells are connected in series so the voltage of each cell will be added. The voltage of cell is 3.7 and the total voltage of the battery pack is changes between 11 to 12 volts.

Calculation:-

How many AC load watts can a 40A 12V battery run for 3 hours and how many watt panels will charge the battery?
Ans.12V, 40Ah

Power = V*I

12*40 = 480Wh

For 3 hours backup time-

480 Wh divided by 3 hours, 480/3 = 160 Watts

However, no conversion is 100% efficient. If we assume 80% efficiency, then the answer is 0.8 * 160 = 128 Watts.

A 12V battery has an energy capacity of 480Wh so, the charge capacity of this battery=

We know that E = Q*V

480Wh = Q(12V)

Q = 480Wh/12V

Q = 40Ah