M.Kumarasamy College of Engineering
NAAC Accredited Autonomous Institution
Approved by AICTE & Affiliated to Anna University
ISO 9001:2015 Certified Institution
Thalavapalayam, Karur, Tamilnadu.

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

18EEP202L-MINOR PROJECT

FINAL REVIEW

GENERATING ELECTRICITY FROM NON BIODEGRADABLE WASTE

YEAR/ SEMESTER – II/III

BATCH NUMBER :4

PRESENTED BY:
M DHANOOSH M (927622BEE020)
R DHARSINI (927622BEE022)
M KAVIYA (927622BEE056)

GUIDED BY:

Mr.N.SELVAM M.E.,
ASSISTANT PROFESSOR/EEE

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PROBLEM STATEMENTS

Non-biodegradable waste, including plastics, rubber, and certain metals, constitutes a significant portion of municipal solid waste and poses a severe environmental threat due to its persistence in the environment. Current waste management practices, which primarily focus on landfilling, incineration, or limited recycling efforts, fail to harness the potential energy locked within these materials. This problem statement addresses the need for innovative solutions to effectively utilize non-biodegradable waste as a valuable resource for sustainable energy production. Developing a reliable and efficient system for converting non-biodegradable waste into electricity represents a crucial step towards a more sustainable and circular waste management approach.

DESCRIPTION

Generating electricity from non-biodegradable waste involves harnessing the untapped energy potential locked within materials that do not naturally decompose over time. This innovative approach addresses two critical global challenges: the escalating demand for energy and the mounting issue of non-biodegradable waste accumulation. The process begins with the collection and sorting of non-biodegradable waste materials, which include items like plastics, rubber, and certain metals. These materials are then subjected to a specialized conversion process designed to extract energy in the form of electricity.

COMPONENTS USED

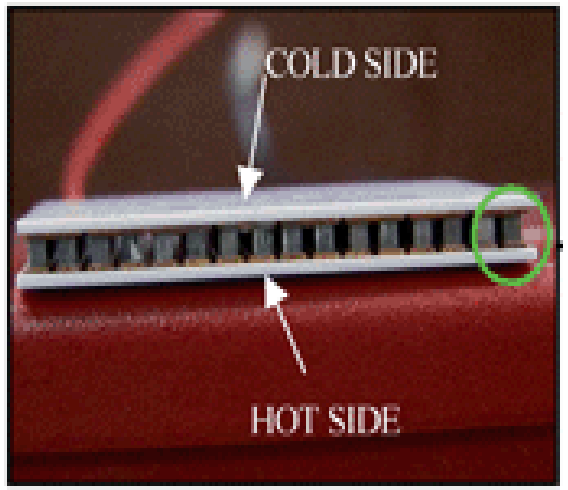
- Electricity generating zaar box
- Storage battery
- Cooling filter
- Roller
- Carbon collecting plate
- Inverter circuit
- Bulb

STORAGE BATTERY

A storage battery, commonly known as a rechargeable battery or secondary cell, is a type of electrochemical cell that can be charged, discharged, and recharged multiple times. Unlike disposable batteries, which are designed for single use, storage batteries are built to be reused, making them more environmentally friendly.

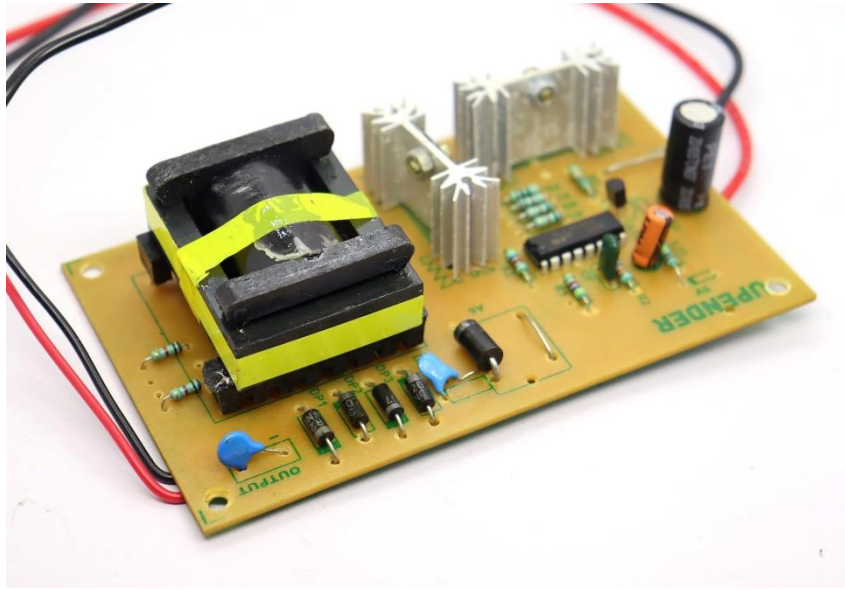
THERMO ELECTRIC MATERIAL

Thermoelectric materials are special substances that can convert heat energy into electrical energy and vice versa through a phenomenon known as the Seebeck effect. This property makes them crucial components in thermoelectric devices, which have applications ranging from power generation to temperature control.



INVERTER

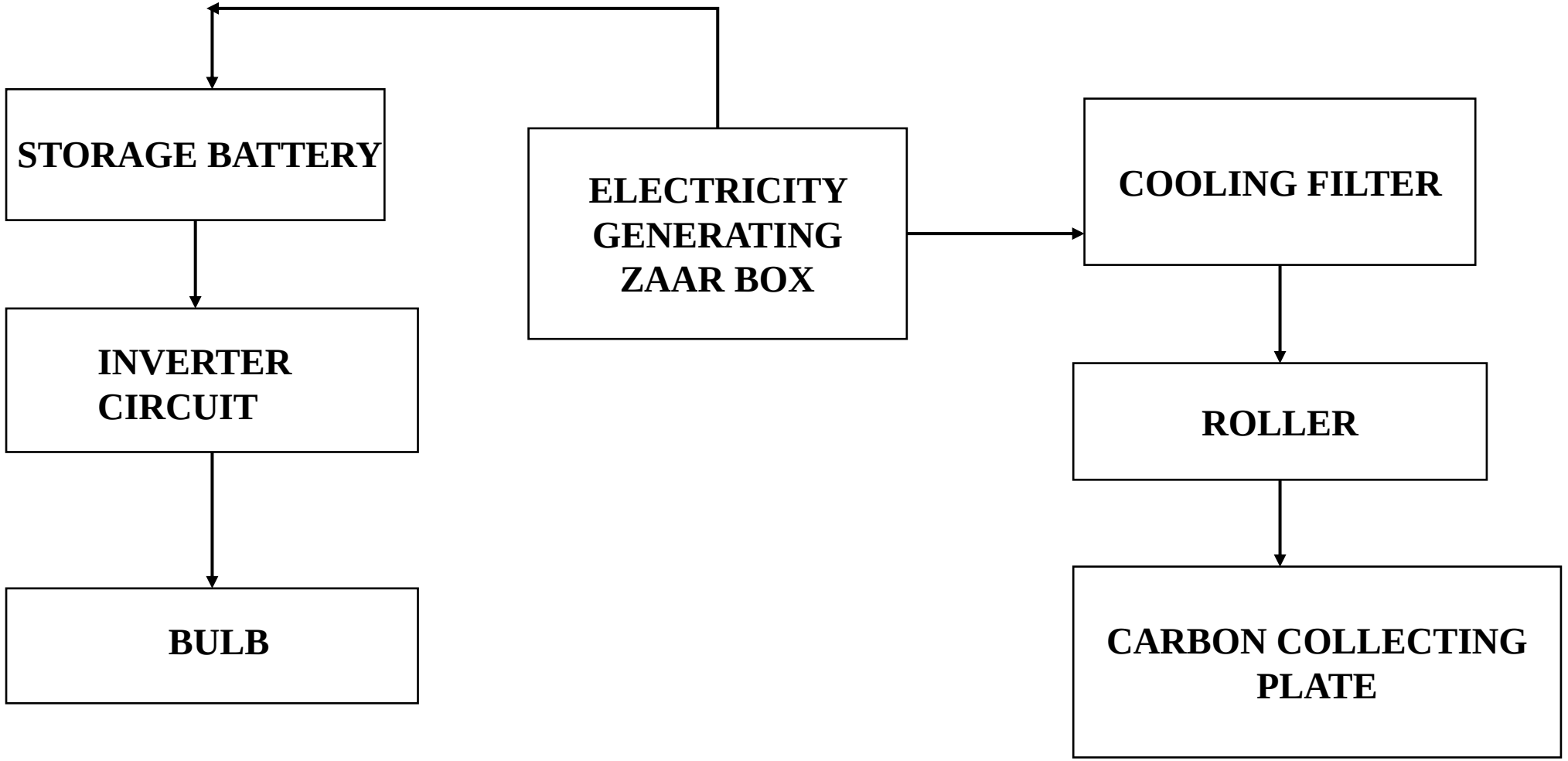
An inverter is an electronic device that converts direct current (DC) power to alternating current (AC) power. This conversion is crucial in various applications, especially in situations where AC power is needed, but the source of power is DC.



LED BULB

LED (Light Emitting Diode) bulbs are energy-efficient lighting devices that have become increasingly popular as an alternative to traditional incandescent and fluorescent bulbs. LED bulbs have a much longer lifespan compared to incandescent and fluorescent bulbs. They can last tens of thousands of hours, which means they need to be replaced less frequently.

BLOCK DIAGRAM



WORKING

Firstly, the non-biodegradable waste is collected and heated by using the electricity zaar box. Inside the zaar box a thermoelectric generator is housed and thus, it converts the heat energy into electrical energy. The electrical energy is stored in the storage battery. The supply is in DC. An inverter is connected to the storage battery which it converts the Dc supply into an AC supply. Now, the AC supply through the inverter circuit supplied to the bulb and which it makes to glow.

The cooling tower takes the excess from the electricity zaar box for the condensation process. The roller collects the carbon waste from the exhaust. The roller is associated with the carbon collecting plate.

COST ESTIMATION

S.NO	COMPONENT DESCRIPTION	QUANTITY	COST
01	Electricity generating Zaar box	1	800
02	Storage battery	1	750
03	Power inverter	1	1000
04	Bulb	1	150
05	Cooling filter	1	700
		TOTAL	**3450**

SURVEY ANALYSIS

SURVEYOR NAME:

Kamatchi G

COMMUNITY PLACE:

Thendral Nagar, Thanthonimalai, Karur.

PROBLEM IDENTIFICATION:

The improper disposal of non-biodegradable waste leads to the accumulation of landfills and the natural environments.

IMPLEMENTATION PLAN

Develop and optimize a waste-to-energy conversion technology tailored for non-biodegradable waste, focusing on efficiency and environmental sustainability.

Establish partnerships with waste management facilities to procure feedstock and integrate the electricity generation system into existing infrastructure.

Pilot the implementation in select regions, evaluating scalability, economic viability, and environmental impact to inform widespread deployment and adoption strategies.

IMPLEMENTATION PHOTOS

Thank You