

# ELECTRICITY GENERATED BY WATSE MATERIAL

**Mr. Laxman S. Hale**

**(Dept. of Electrical Eng.)**

**Mr. Gaikwad S. Balaji**

**(Dept. of Computer Eng.)**

**Mr. Arbaj A. Kureshi**

**(Dept. of Electrical Eng.)**

**Mr. Gajanan N. Balne**

**(Dept. of Computer Eng.)**

## ABSTRACT

Energy resource constraints, climate change, and international energy disputes have had a severe impact on society at all levels this year and have increased the threat to global stability. These issues can be diminishing the fossil fuel reserves to the rise of the world population, Global climate change, and increasing in wastes levels (solid/liquid) and can be resulting to the electricity crisis. The electricity problem is preventing socioeconomic and technical advancement in many emerging nations. Additionally, it causes job availability to decline because of the closure of various industries or industry relocation to surrounding nations due to such a problem. The goal of this project is to create electrical energy out of waste items like plastic, rubber, rubbish, and other waste materials, store it in a battery via a circuit, and then use it to power the entire system. As a result, we demonstrate in this project how to create electricity from waste and store it in batteries.

## INTRODUCTION

Electricity generation from waste material is a rapidly growing field that involves the conversion of various types of waste into usable energy. This process is often referred to as waste-to-energy, and it offers several benefits including reducing waste in landfills, reducing greenhouse gas emissions, and providing a source of renewable energy.

The process of generating electricity from

Waste materials typically involve the use of thermal or biological processes. Thermal processes involve the incineration of waste, which is then used to generate steam to power turbines and produce electricity. One of the main advantages of electricity generation by burning waste materials is that it reduces the volume of waste sent to landfills, which in turn reduces the amount of space required for landfill sites. This can help to mitigate the negative impacts of landfill sites on the environment, such as groundwater contamination and greenhouse gas emissions.

Another advantage of electricity generation by burning waste materials is that it produces a reliable source of electricity. This is particularly important in areas where there may be limited access to other sources of electricity, such as remote communities or developing countries.

The technology used to generate electricity from these waste materials is constantly evolving, and new innovations are being developed to make the process more efficient and cost-effective. Overall, the generation of electricity from waste material represents an exciting opportunity to reduce waste, lower greenhouse gas emissions, and provide a source of renewable energy for communities around the world.

Electricity is a need in modern society. Therefore, we employ a variety of fuels to produce power, including coal, petrol, diesel, uranium, etc. There is a finite supply of each of these fuels. We could live for up to 70 or 80 years. These fuels are used to produce energy in various power stations.

**TYPES OF SOLID WASTE BASED ON ORIGIN:**

**RESIDENTIAL:** The wastes which are refers to wastes which are from apartments, houses, dwellings, food, vegetables, plastic, books, cloths, glass, etc.

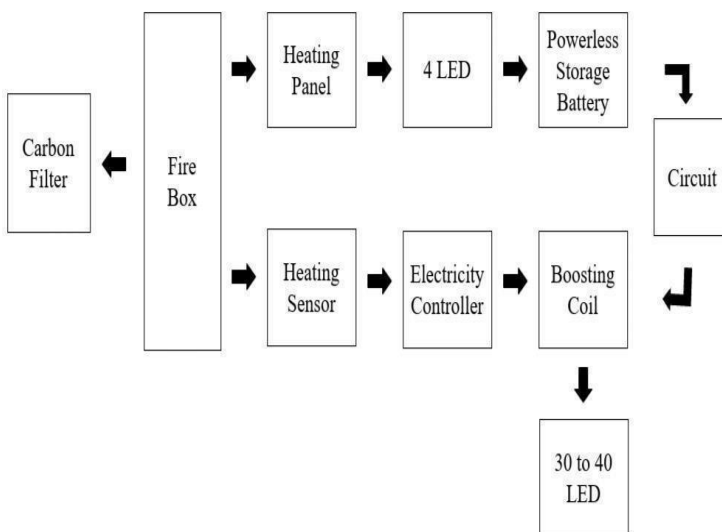
**INSTITUTIONAL:** These are the wastes which are generated from the institutions like schools, colleges, public buildings, etc.

**COMMERCIAL:** These are the wastes that refers to mainly consist of glasses, metals, markets, restaurants, hotels, stores, malls, ashes, etc.

**AGRICULTURAL:** The agricultural waste mainly consists of spoiled food grains, orchards, vegetables, vineyards, farms etc.

provide an overview of the key findings and developments in this field.

**BLOCK DIAGRAM**



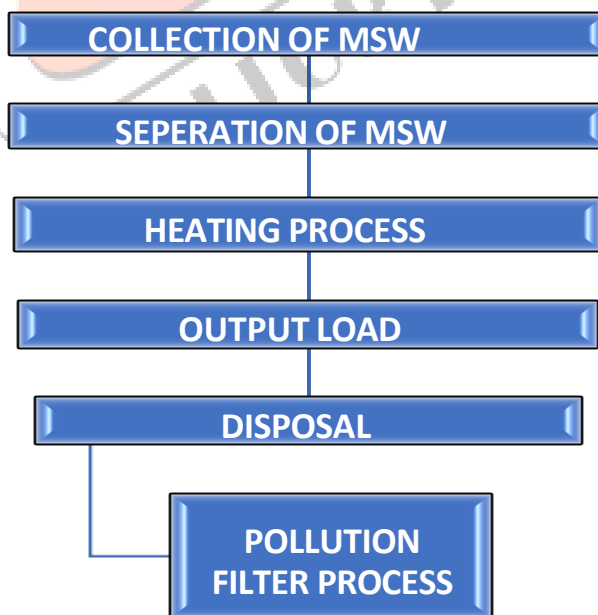
**LITERATURE REVIEW**

The generation of electricity from waste materials is an emerging field with significant promises for addressing both environmental and energy challenges. This literature review aims to provide an overview of key studies and advancements in the domain of generating electricity from waste materials, shedding light on the various technologies, applications, and environmental implications associated with this innovative approach.

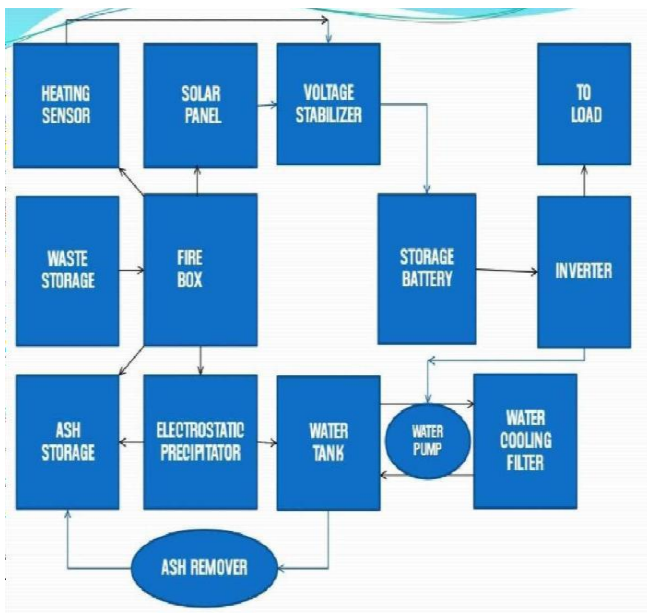
Generating electricity from waste materials is a novel approach that addresses the dual challenges of waste management and sustainable energy production. The concept has garnered significant attention in recent years, and this literature review aims to

**METHODOLOGY**

Electricity generation by burning waste materials, also known as thermal waste-to-energy, typically involves the following methodology:



## SYSTEM DESIGN



### Working of the Proposed System:

The proposed waste-to-electricity system operates seamlessly to harness the energy potential within waste materials. As waste materials are burned within the burning box, specialized heating panels are strategically placed to capture and convert the resultant heat into electrical energy. This conversion process utilizes innovative

thermoelectric technology or similar mechanisms to efficiently transform thermal energy into usable electricity. Concurrently, a red LED bulb is integrated into the system, serving as a visual indicator of electricity generation. When the heating panels successfully generate electricity, the LED bulb illuminates, providing immediate feedback on the system's power production status. Moreover, the

system incorporates a circuit mechanism designed to manage the distribution of electricity. Once generated, the electrical energy is directed towards charging a battery component within the system. When we start burning the waste material in the burning box the heating panels will start collecting the generated heat energy by waste material in the burning box. The heat energy collected by heating panel will be converted into the electrical energy. The generated electrical energy will be seen in circuit boxes with led glowing. The generated electrical energy will transfer to the batteries through the power boosters. The batteries will not dissipate the energy back because a diode is connected to it. The batteries relate to the heat sensor and LED bulbs. Whenever the heat sensor starts conducting the batteries allow energy to flow and LED bulbs will start conducting. The proposed waste-to- electricity system operates seamlessly to harness the energy potential within waste materials. As waste materials are burned within the burning box, specialized heating panels are strategically placed to capture and convert the resultant heat into electrical energy This conversion process utilizes innovative thermoelectric technology or similar mechanisms to efficiently transform

thermal energy into usable electricity.

### ADVANTAGES

- Environmental Sustainability: The system contributes to environmental sustainability by efficiently converting waste materials into electricity.
- Waste Management.
- Renewable Energy Generation.
- Land Conservation.
- Pollution Reduction.

### DISADVANTAGES

- Initial Investment Costs.
- Environmental Concerns

### CONCLUSION

The successful implementation and demonstrate effectiveness of this waste-to-energy project pave the way for promising future advancements and applications in the field. Moving forward, there is considerable scope for further research and development to optimize the efficiency and scalability of waste-to-electricity systems. Exploration of advanced technologies, such as improved waste sorting and processing techniques, enhanced heat-to-electricity conversion methods, and innovative pollution control measures hold immense potential for enhancing the sustainability and environmental impact of waste-to-energy initiatives. Additionally, the integration of renewable energy sources, such as solar and wind power, with waste-to-energy systems could further diversify and enhance the reliability of energy generation while reducing reliance on fossil fuels. Furthermore, collaboration with stakeholders from government and industry.

### REFERENCES

1. S. Papong, T. Kiatsiriroat, and S. Dechapanya, "A Review of Municipal Solid Waste-to-Energy Technologies," *Energy Procedia*, vol. 153, pp. 21-26, 2018.
2. S. Babel and A. Kumar, "Review of Technologies for Converting Organic Waste to Electricity," *Renewable and Sustainable Energy Reviews*, vol. 130, p. 109955, 2020.
3. Olaide Monsor Aderoju (PHD in View in Environmental Science & Technology.)
4. F. O. Ongondo, I. D. Williams, and T. J. Cherrett, "Global Review of Electrical and Electronic Waste Management," *Waste Management*, vol. 31, no. 4, pp. 714-730, 2011.