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TO

OUR PRESENTATION

Department of Mechanical Engineering

Project Tittle :

Design and Construction of a Waste Plastic Bottle Strip Cutting Machine

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Objective

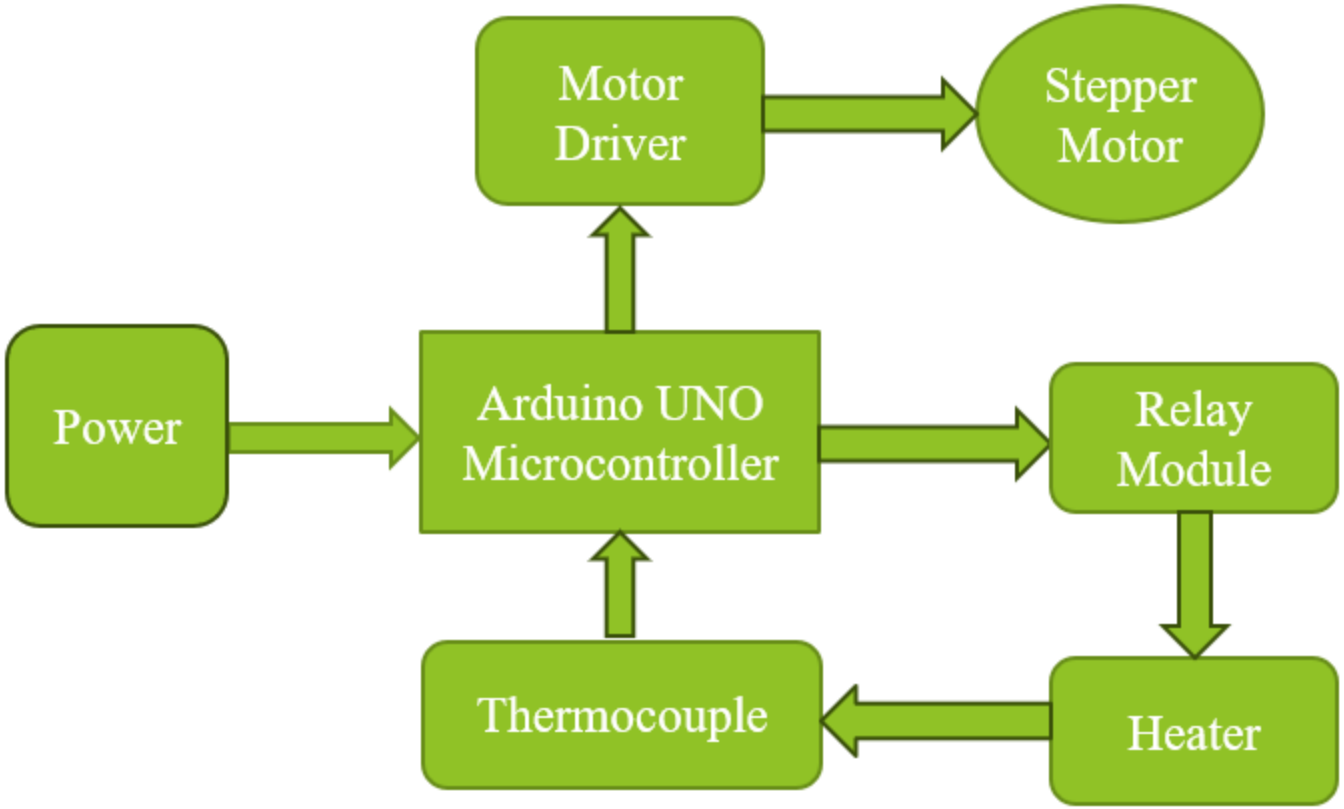
The objective of the design and construction of a waste plastic bottle strip cutting machine project is to develop a mechanical system that can efficiently convert waste plastic bottles into reusable strips or filaments. These strips can then be utilized for various purposes, such as creating ropes, woven products, 3D printing filament, or other practical applications. Here are the detailed objectives:

- to study about waste materials
- to design a device which can use waste plastic bottle
- to construct a strip cutting machine
- to analyse the data from plastic bottle strips

Introduction

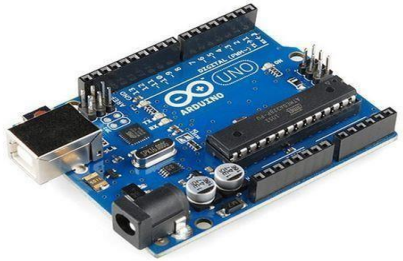
Plastic waste is one of the most significant environmental challenges of our time, with billions of plastic bottles being produced and discarded annually. Improper disposal of these bottles leads to severe environmental pollution, harming ecosystems and contributing to the growing global waste crisis. Recycling and repurposing plastic waste is an effective strategy to mitigate this issue and promote sustainable practices.

Block Diagram of Project



Required Components

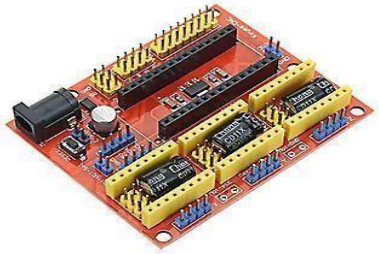
Arduino UNO



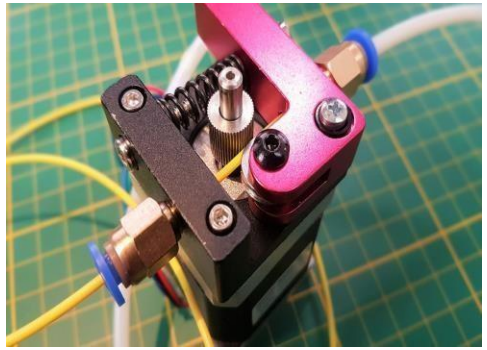
Nema 17 Stepper Motor



Motor Driver



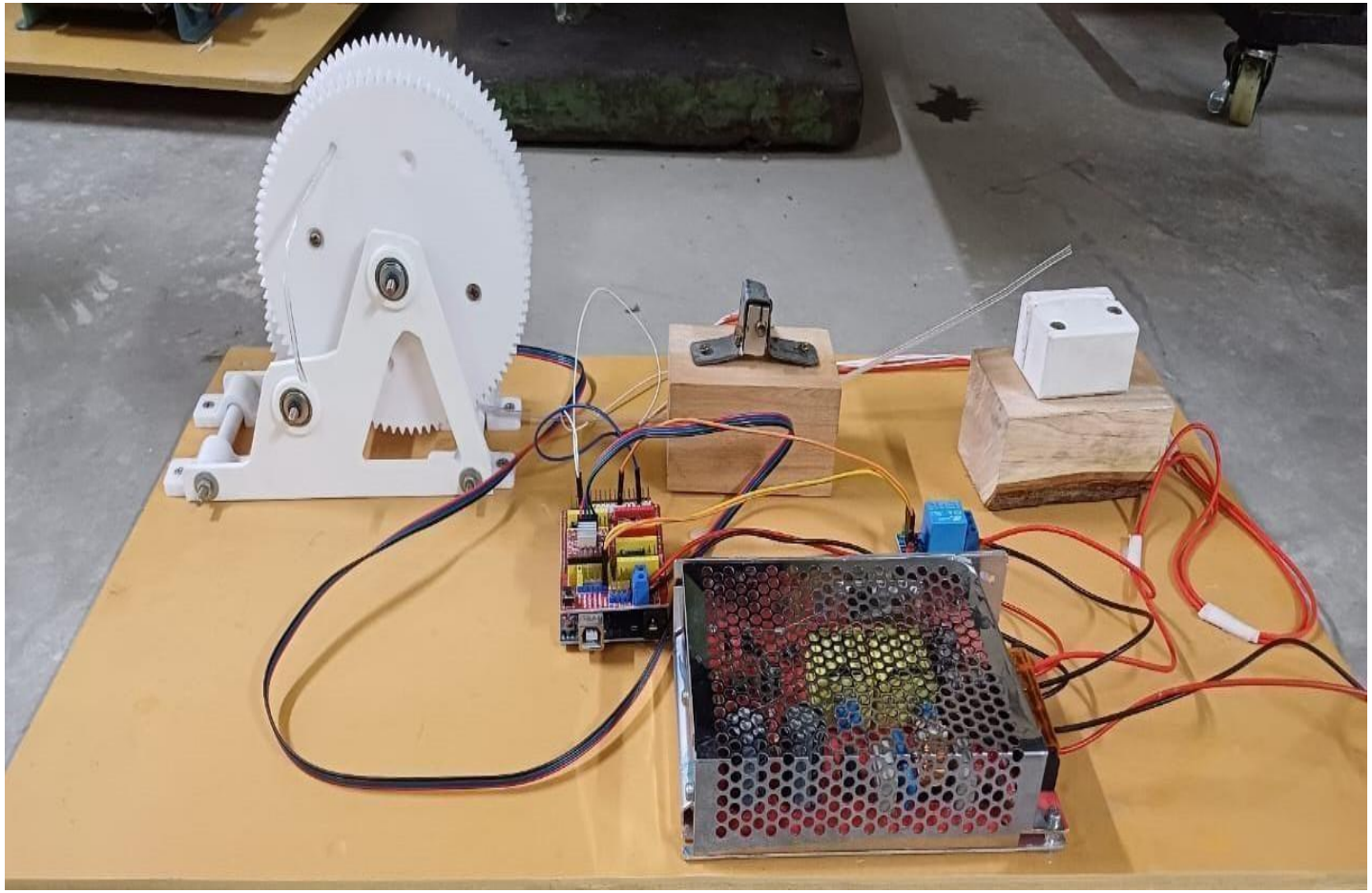
3D printer Extruder



SPMS



Hardware Implementation



Experimental Results

This project focuses on designing and constructing a waste plastic bottle strip cutting machine, a device aimed at converting discarded plastic bottles into reusable strips. These strips can serve various purposes, such as making ropes, crafting, packaging, and even producing filament for 3D printing. By creating a machine that simplifies and accelerates the recycling process, this project contributes to reducing plastic waste while fostering innovation and sustainability.

SL	Strip Type	Length (Inch)	Weight (N)	Rockwell Hardness (HRN)
1	Ultra Wide	22.5	323.73	5
2	Wide	41.5	274.68	5
3	Wire	38.5	421.83	20

Advantage

The Design and Construction of a Waste Plastic Bottle Strip Cutting Machine offers several advantages that contribute to environmental, economic, and social benefits. These advantages include:

- Environmental Benefits
- Economic Benefits
- Social and Educational Benefits
- Operational and Technical Advantages
- Innovation and Technological Advancements

Applications

The Design and Construction of a Waste Plastic Bottle Strip Cutting Machine can be applied in various sectors and industries, providing a sustainable solution to plastic waste while creating opportunities for new products and processes. Some of the key applications of the machine include:

- Art and Craft
- Textile and Fashion Industry
- Packaging Industry
- 3D Printing
- Agriculture
- Construction and DIY Projects

Discussion

The design and construction of a waste plastic bottle strip cutting machine involves several key stages, each contributing to the overall functionality, efficiency, and usability of the machine. The process encompasses various technical, operational, and design considerations to ensure the machine meets its objectives of transforming waste plastic bottles into useful, reusable strips. This section discusses the core aspects of the project, including the design considerations, technical challenges, materials, and overall construction process.

Conclusion

The design and construction process involves integrating mechanical and engineering principles to develop an efficient, affordable, and user-friendly machine. The project seeks to address key challenges in recycling, such as ensuring uniformity in strip production, accommodating different bottle sizes, and maintaining ease of operation.

Future Work

While the Design and Construction of a Waste Plastic Bottle Strip Cutting Machine has successfully addressed key aspects of plastic waste recycling, several avenues for future work can further improve its efficiency, scalability, and impact. As the project evolves, there are various areas for enhancement, research, and development. These improvements can contribute to the long-term success of the machine and expand its applicability across different sectors.

1. Optimization of Cutting Mechanism
2. Automation and Integration of Smart Features
3. Material Handling and Feeding Mechanism
4. Incorporation of Recycling and Upcycling Functions

Any Question?


thanks