

Automatic Color Sorter Machine

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ABSTRACT

Sorting of products is a very difficult industrial process. Continuous manual sorting creates consistency issues. This paper describes a working prototype designed for automatic sorting of objects based on the color. TCS230 sensor was used to detect the color of the product and the PIC16F628A microcontroller was used to control the overall process. The identification of the color is based on the frequency analysis of the output of TCS230 sensor. Two conveyor belts were used, each controlled by separate DC motors.

The first belt is for placing the product to be analyzed by the color sensor, and the second belt is for moving the container, having separated compartments, in order to separate the products. The experimental results promise that the prototype will fulfill the needs for higher production and precise quality in the field of automation.

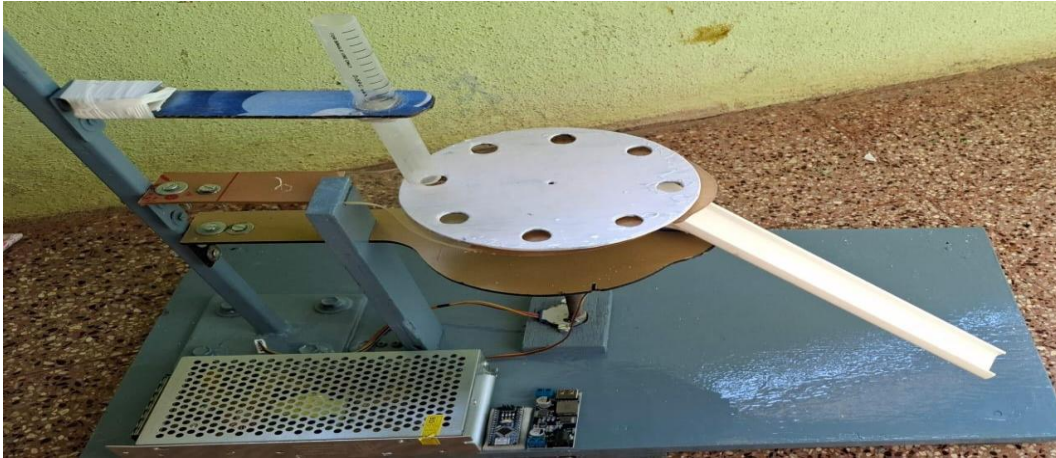
Key Words: *Automatic Colour Sorter Machine, Crucial In Era Of Automation, Increase Productivity, Rapid And Cost Effective.*

INTRODUCTION

Machines can perform highly repetitive tasks better than humans. Worker fatigue on assembly lines can result in reduced performance, and cause challenges in maintaining product quality. An employee who has been performing an inspection task over and over again may eventually fail to recognize the color of product. Automating many of the tasks in the industries may help to improve the efficiency of manufacturing system. The purpose of this model is to design and implement a system which automatically separates products based on their color. This machine consists of three parts: conveyor belt, color sensor, and dc motor. The output and input of these parts was interfaced using PIC microcontroller.

To reduce human efforts on mechanical maneuvering different types of sorting machines are being developed. These machines are too costly due to the complexity in the fabrication process. A common requirement in the field of color sorting is that of color sensing and identification.

ACTUAL MODEL DIAGRAM



METHODOLOGY

The Methodology For Designing And Developing an Automatic Colour Sorter Machine Involves A Structured Approach That Ensures Functionality, Efficiency, And Feasibility.

FEATURE SCOPE

The future scope of automatic colour sorter machines lies in increased automation, AI integration, and wider application across various industries, including agriculture, food processing, recycling, and manufacturing, with a focus on efficiency, accuracy, and sustainability. .

1. Research and Design Phase

- Use computer-aided design (CAD) software to create colour sorter machine schematics.
- Select materials based on durability and availability.

2. Construction Phase

- Source materials and build the prototype according to the design specifications.
- Ensure the construction process allows for easy maintenance and repair.

3. Testing Phase

- Set up a controlled environment to test the Colour sorter machine's performance.
- Measure sorting capacity of machine under various conditions

4. Data Analysis

- Analyze the collected data to determine the sorter machine's efficiency and effectiveness.
- Compare the results with conventional water supply methods to highlight advantages.

5. **Expected Outcomes**

- A functional prototype of colour sorter machine sorts the product effectively.

Designing Of Systems Or Components.

- Designing For Mounting Motor Gear Box And Other Components.
- **Manufacturing And Purchasing Of Components.**
- Purchasing The Required Components Manufacturing Customer Components.
- **Assembly.**
- Moulding Of Motor And Gear Box On To The Chassis.
- Final Assembly Of All Components Motor Gearbox Belt Dehusking Tool Etc
- **Trial And Testing.**
- Testing For Actual Working With Proper Output.
- **Result.**
- Interpolation Of Results And Conclusion

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