

Design and Fabrication of Faulty Product Detection and Separation System

<https://www.youtube.com/watch?v=p6PrRJ-y43U>

The project aims in design and fabricates automatic faulty product detection and sorting system also color-based product sorting system using ARDUINO UNO. Each product is different and thus has different mechanisms to detect faulty products. Here we detect faulty products based on product size. We use a IR sensor to detect each product height and color sensor as products move over a conveyer belt. The faulty product sorting and color product sorting mechanism is done using servo motors. Here we use rollers and rubber belt to develop a mini conveyer belt mechanism. This mechanism is operated by a DC motor the project status will display on LCD module.

Sorting systems are used to bridge between production and packaging machinery. Sorting systems are used to sort items based on various criteria so that they can be packaged accordingly. Manual sorting is a time and effort intensive process. Automatic sorting systems allow for fast and efficient sorting of products.

The controlling device of the whole system is ARDUINO controller. The Arduino with IR sensors and servo motors in order to achieve the desired functionality and demonstrate the fully automated product sorting system. The system consists of a conveyor belt to carry products from one end to collection baskets. It consists IR sensors to sense the type of products according to the height of the product, the system sorts the faulty product through servo motors. DC motors are used to move conveyer belt. Color sensor is used to detect the color of the product which is interfaced to the arduino. Based on the input of color sensor (Red and other) the system sorts the products through servo motors.

The main objectives of the project are:

- Design an Automated Sorting Machine.
- Design a color, height-based product Sorting Machine.
- DC motor-based conveyor belt design.
- Sorting mechanism designed by servomotor.
- Visible alerts using LCD display.
- To detect the height using IR sensor.
- To detect the color of the product using color sensor.
- To achieve this task using arduino microcontroller.

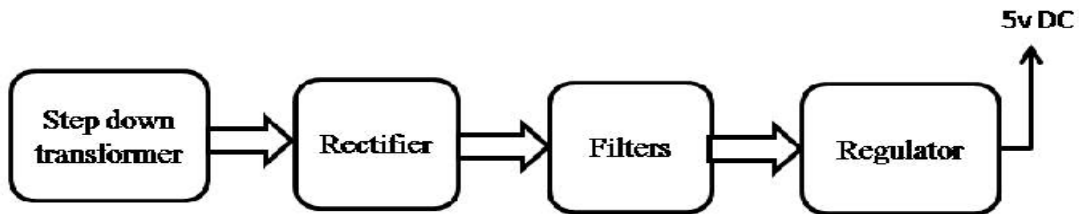
The main building blocks of the project are:

- ▶ Power Supply.
- ▶ Arduino.
- ▶ Color Sensor
- ▶ IR sensors
- ▶ DC motor
- ▶ Servo motor.
- ▶ Conveyer belt
- ▶ LCD module.

Software's used:

1. Arduino IDE for compiling and dumping code into controller
2. Express SCH for Circuit design.
3. Proteus for hardware simulation.

Regulated Power Supply:



Block Diagram:

