

Development Automatic Food Sorting Machine

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1.INTRODUCTION

Sorting of the product on the basis of its weight is the major task that needs to be done in the final packaging section. To remove drawbacks of 'conventional packaging' using barcode scanning like fake product with original barcode applied on them or like failure of barcode to differentiate between actual product and its fake prototype, our automatic sorting machine can be used instead. Sorting of products in an industry is generally carried out manually. Continuous manual sorting.

2.COMPONENTS

The main task performed here is to sort the products in the company. The purpose of this project is to save the time for inspection and to reduce the efforts of the workers in material handling. An automatic sorting machine has main task of sorting components according to the weight, size. A sorting machine is more practical and economical method of automation, which transfers material from one point to another. This also consists of conveyor belt, which reduces the efforts of material handling. Also both processes take place simultaneously i.e. material handling and inspection.

Design of the automated sorting machine using conveyor belt used for manufacturing industry in many fields is a very complex process. The system needs to satisfy industry requisitions. This is an industrial automation based application. It shows the concept of normal conveyor belt, but with some intelligence. We can also call it as intelligent conveyor belt, as it has also ability to sort the object of different colour and weight. By developing such sorting system the production rate of the company has been increased since these sorting systems replaced the human resources.

WEIGHT SENSOR (LOAD CELLS):- Load cells are very commonly used to weight in factory. They can be installed on hoppers; reactors etc and allow controlling the weight in the capacity, which is often of critical importance for an factory process. Some performance characteristics of the load cell must be defined and specified to make sure they will cope with the expected service .we use weight sensor to identify the weight of the product on conveyor belt. In our mechanism weight sensor creates quality consistency issues. Therefore we have proposed an efficient method which uses load cell, IR sensor for identifying and separating products on the basis of their weight. Microcontroller to control the overall process of sorting of objects is used. The system rejects and

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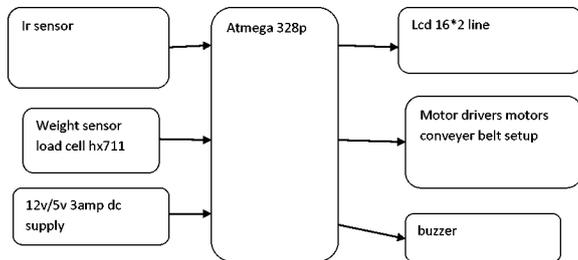
discards objects that are not of required characteristics by pushing them out of conveyor line using a DC motors. A rectangular container, having three partitions is used to collect objects of three different sizes. One conveyor belt is used, which is controlled by DC motors. The belt is for placing the product to be analyzed by the load cell and inductive sensor, which also contains a IR sensor and weight sensor panel at the starting of conveyor for of separating object

MICROCONTROLLER:- A microcontroller's processor will vary by application. Option range from the simple 4-bit, 8-bit, or 16-bit processors to more complex 32- bit or 64-bit processor. In terms of memory microcontrollers can use RAM, Flash memory, EPROM. Generally microcontroller are designed to be readily usable without additional computing components because they are designed with sufficient on board memory as well as offering pins for general I/O operation so they can directly interface with sensors and other components . We use ATMEGA 328 microcontroller.

CONVEYOR BELT:- A conveyor belt is the carrying medium of a belt conveyor system. A belt conveyor system is one of many types of conveyor systems. A belt conveyor system consists of two or more pulleys with an endless loop of carrying medium the conveyor belt that rotates about them. One or both of the pulleys are powered, moving the belt and the material on the belt forward. The powered pulley is called as drive pulley while the unpowered pulley is called as idler pulley. There are two main industrial classes of belt conveyor; those in general material handling such as those moving boxes along inside a factory and bulk material handling such as those used to transport large volumes of resources and agricultural materials.

DC MOTOR:- A DC motor is any of a class of rotary electrical machines that converts direct current electrical energy into mechanical energy. The most common types rely on the forces produced by magnetic fields. Nearly all types of DC motors have some internal mechanism, either electromechanical or electronic; to periodically change the direction of current flow in part of the motor. DC motors were the first type widely used, since they could be powered from existing direct-current lighting power distribution systems. A

DC motor's speed can be controlled over a wide range, using either a variable supply voltage or by changing the strength of current in its field windings.



3.Problem Defination In food/fruit industry boring and time consuming work is of counting and sorting of packets with respect to size is difficult task and also requires high man power which leads to human error such as Mixing of other sized packets/pieces. Miss match of count more or less packets/pieces are packed. Difficult in maintaining.

4.CONCLUSION ;- Thus an effective shorting & feeding system as been fabricated with help of micro controllers and convyers with use automation techniq if property applied this system will help small scale industreys increase their production by their overall lead type the main objective of or weit based company or I ndustrey by reducing the part lead time which direct in affects the reduction in time overall leads time.

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6.Reference:- [1] Zulhashikin Bin Talib, "Design and Modelling of automated sorting system in manufacturing industry using simlation software," *thesis of universiti teknikalMalaysia, meleka may2007*. [2] Y V Aruna, "Automatic convey or System with In-Process Sorting Mechanism" *International Journal of Engineering Research and Applications, ISSN: 2248-9622, vol. 5, Issue 11, (part 3) November 2015*.