

Object Segregation Using Micro controller

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INTRODUCTION

- A product manufacturing involves huge analysis and quality management along with its quantity measurements. As there are two levels of manufacturing industries, they are basically classified as :
- Large-scale industries
- whose classification is purely based on production rate i.e. quantity factor. It can generally be achieved by manual labor in case of industry with low production rate. Even then it is completely impossible to make an accurate measurement and sorting throughout the production. The quantity of any product say it fruit, pen or any object

is an important factor for estimating the economy growth and financial status of the industry.Another important thing is to sort it as it makes is easier for the producer to arrange and give it as per his customers requirement as well as for the distributor to give it according to its customer requirement. Also another important thing is the producer can produce only the objects of the size that is required. This project aims in counting the number of objects placed on a moving conveyor and sort the objects depending upon one of its attributes that is it's height that helps in improving the statistics of the production. This can generally be achieved by using IR sensors and micro-controller as key components and to provide a digital display of the count on a LCD screen.

LITERATURE SURVEY Research Journal

SR N O.	YEA R	PAPERS		PARAMETE RS	TECHNOLO GY
1.	July 2012	Automtaic,	sorting, counting	automating the sorting along with the counting	Microcontroll er (89C51)
	1LI	NRD2305912	International Journal of Novel Research and Development (www.i	inrd.org) i927	

2.	May 2016	Low Cost Automation for Sorting of Objects on Conveyor Belt	a system which uses low cost and open source software for achieving the goal of sorting the objects	Raspberry pi 3	
3.	July- 2016	PLC Based Object Sorting Automation	developed a Low Cost Automation System for sorting the	A programmable logic controller (PLC)	
IJNRD2305912 International Journal of Novel Research and Development (www.ijnrd.org) i928					

			light weight objects on the basis of height variation	microcontrolle r
4.	Februa ry 2017	"Improved Automated Conveyor with Auto Separated System for Oil Packaging Industry"	Sorting the oil storing objects	Programmable Logic Controller





CIRCUIT DIAGRAM



POWER SUPPLY



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FEATURES OF PIC18F4520

Program Memory Type	Flash		
Program Memory (KB)	32		
CPU Speed (MIPS)	10		
RAM Bytes	1,536		
Data EEPROM (bytes)	256		
Digital Communication Peripherals	1-UART, 1-A/E/USART, 1- SPI, 1-I2C1-MSSP(SPI/I2C)		
Capture/Compare/PWM Peripherals	1 CCP, 1 ECCP		
Timers	1 x 8-bit, 3 x 16-bit		
ADC	13 ch, 10-bit		
Comparators	2		
Temperature Range (C)	-40 to 125		
Operating Voltage Range (V)	2 to 5.5		
Pin Count	40		

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PCB LAYOUT



ENCLOSURE DESIGN



FIG: OBJECT SORTING USING CONVEYOR BELT

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RESULTS



FIG:WHEN A BIGGER OBJECT IS PASSED



RESULTS



FIG:WHEN A SMALLER OBJECT IS PASSED



TEST RESULTS

OBJECTS PASSED:	2	OBJECT NO	HEIGHT OF OBJECT	
OBJECT COUNT DISPLAYED ON LCD OF SMALL SIZE:	1	Object No. 1	SMALL	
OBJECT COUNT DISPLAYED ON LCD OF BIG SIZE:	1	Object No. 2	BIG	
Testing For Object Counting: Testing For Object Sorting On The Basis Of Height:				

CONCLUSION

- In this project report, we have tried to create a setup that will decrease human effort and succeeded to an extent by using the low cost automation system (LAC) to avoid risk, improve accuracy, increase speed of production and reduce the cycle time. When the Industrial Revolution took place in North-Eastern Countries it also laid a high demand for workers or labor for cutting, drilling, etc.., But as soon as technology replaced the need of humans, the demand for an error free system raised. And hence not just that but also the deciding factor of any industry seems to be its production. And hence it is equally important to speed up the production process by advancing technology.
- Hence this paper is an idea developed to increase the counting operations also making it easier to get/find the objects easily as it is in sortedform in an industry. It deals with generating a total value of objects moving on a conveyor after manufacturing and sorting them depending upon their heights(sizes) before packing.

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FUTURE SCOPE

- Anyone can upgrade the system using the following instructions:
- Using of timing belt and gear instead of direct connection with roller and motor shaft will be more efficient. But care should be taken with the proper meshing of timing belt and gear.
- Some rubber gripers can be used. It increases surface resistance which helps to avoid slipping of conveyor belt.
- Instead of using too many IR sensors one can use a dfferentsnsor for different sizes.
- A pneumatic actuator can be used for sorting and placing the objects in different belt.
- In this project only 2 sizes are taken into consideration one can increase its no.
- One can use arduino (ATMEGA328 etc) to increase its efficiency and make more use of its applications as compared to PIC microcontroller.

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