International Journal of Advance Research in Science and Engineering
Volume No.07, Special Issue No.03, February 2018
www.ijarse.com
IJARSE
ISSN: 2319-8354

Automation in Material Handling of the Milk& Milk Product Pouches at Dairy Industry

Prof. Ms. Nangare S. T.[1], Mr. Yadav Shrikant M.[2], Mr. GonganeSagar S.[3], Mr. Shinde Akshay Kumar V.[4], Mr. Patil Rohit S[5], Mr. MohitePrajyot S.[6]

[1]Asst. Prof. Mechanical Engineering,
NanasahebMahadik Collage Of Engineering Peth, Maharashtra, (India)
[2,3,4,5,6]B.E. Mechanical Engineering,
NanasahebMahadik Collage Of Engineering Peth, Maharashtra, (India)

ABSTRACT

Now computer and technology have penetrated the industry, automation has the competitive advantage in today's manufacturing world. Nowadays, people call for economical society the market has the new request with related package design. The economical packages achieve the lowest cost and minimize resources communication and maximize the benefits.

Keywords: Ardiuno,Conveyor,Sensor.

I.INTRODUCTION

The economical packages achieve the lowest cost and minimize resources communication and maximize the benefits. The process control systems were based on electromechanical relays, connected together in logical pattern. The new atomized system can be used to control a single machine build up total control and management system to make entire plant more productive. Automation has allowed for companies to mass production at outstanding speed and with great quality and low cost. Automation plays an increasingly important role in the world economy and in daily experience. Automation is the control system and information technology to reduce need for human work in production of goods and services.

The Indian dairy industry is contributing significant role in the country economy. A dairy is a place for production of milk product. This plant is rapidly expanded and modernized with improved machinery to large scale of production.

II.LITRATURE SURVEY

Elaborated and simplify how different products manufactured in factory can be put on single conveyer for its proper distribution and data logging in a random sequence. The goal is develop a conveyor belt which will play a vital role in small scale as well as large scale industries distributing and logging the data, consequently reducing the cost of labor and multiple conveyers'. The system leverages a conveyer belt with two motors, a mechanism to short the product and a webcam in proximate of the apparatus. Determining real time and highly accurate characteristics of small objects in a fast flowing stream would open new directions for industrial sorting processes.The modification and latest technologies or methodologies used in different applications to reduce failures, maintenance cost and equipment related a fatal accident occurs during operation [1]. Material flow in cellular manufacturing systemsis usually supported by a series of materials handling subsystems for intercellular and intracellular handling. For example, an automated guided vehicle system may be used to move unit loads between manufacturing cells. Once transferred to a cell through a transfer station, the load may bemoved by a dispatched conveyor system toan automatic transfer line interfacing an individual work center [2]. Describedautomatedmaterial handling system (AMHS) play a central role in modern fabrication facilities (Fabs) Typically, Conveyer-based continuous flow transport (CFT) implementations are starting to gain support with the expectation that CFT system will be capable of handling high-volume manufacturing transport requirements.[3]

III.PROBLEM DEFINATION

Now days material handling system manually done. To overcome this problem we are developing an automated model which can improve the handling of milk pouches in low cost. manual sorting is the conventional approach that is preferred by industries which involves visual observation performed by human beings. This is an approach where human laborers are made to work for maximum time to achieve the desired task.

IV.EXISTING SYSTEM

The Existing System shown in fig. below.The manually material handling system feeding milk pouches in Buckets and the weight of milk pouches checked randomly byweight pan. They required more timefor checking weight and feeding in container or Buckets.Thework does not effectively.

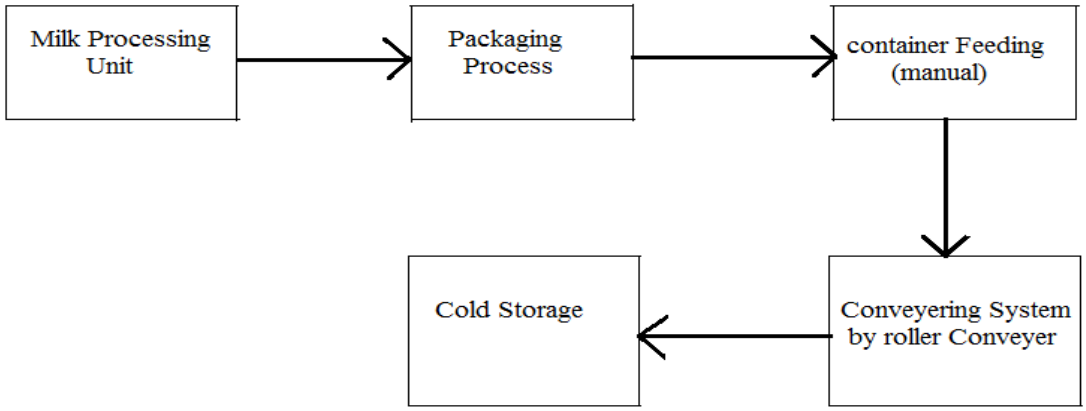


Fig.Block diagram of Existing work

V.PROPOSED WORK

In proposed work system the milk is processed and packed in pouches then that milk pouches automatically feed in buckets (container) and during that time that packages are counted by sensors and also weight measured by weight pan after that container is transferred to cold storage room. They use the roller conveyor for the transfer of buckets (container) to the storage room. Whenever weight of the milk pouches below or above than selected limit then the milk pouches should be rejected.

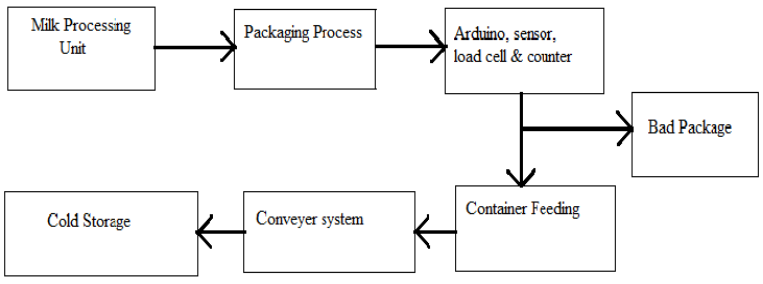
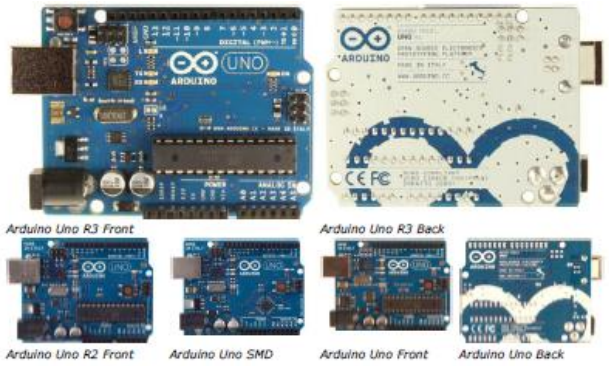


Fig. Block Diagram of Proposed System.

International Journal of Advance Research in Science and Engineering
Volume No.07, Special Issue No.03, February 2018
www.ijarse.com
IJARSE
ISSN: 2319-8354

VI.MAJOR PARTS

6.1 Arduino Uno



The Arduino Uno is a microcontroller board based on the ATmega328 (datasheet). It has 14 digitalInput/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic.Resonator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power itwith a AC-to-DC adapter or battery to get started. The Uno differs from all preceding boards in that it does not use the FTDI USB-to-serial driver chip. it features the atmega16U2 (Atmega8U2 up to version R2) programmed as a USB-to-serial converter. TheArduino Uno can be powered via the USB connection or with an external power supply. The power source is selected automatically. External (non-USB) power can come either from an AC-to-DC adapter (wall-wart) or battery. Theadapter can be connected by plugging a 2.1mm center-positive plug into the board's power jack. Leadsfrom a battery can be inserted in the Gnd and Vin pin headers of the POWER connector.The board can operate on an external supply of 6 to 20 volts. If supplied with less than 7V, however,the 5V pin may supply less than five volts and the board may be unstable. If using more than 12V, thevoltage regulator may overheat and damage the board. The recommended range is 7 to 12 volts.

6.2 Photoelectric sensor

The transmitter and receiver are accommodated in a single housing in retro reflective photoelectric sensors. The light emitted by the transmitter hits a reflector and is reflected. The receiver evaluates the reflected light. The advantage lies in the small size of the reflector. It is also easy to install because it is a passive element and thus requires no connections. Laser sensors provide an almost parallel light beam. Where by the light beam is extremely fine and parallel over the entire operating range. This advantage is, above all, used when the smallest of objects have to be detected along the entire operating range. Regardless of the physical principle, all retro reflective photoelectric sensors from Sense Part have a so-called polarization filter. Polarization filters are optical filters that let the light beams through only in one direction. Use of a polarization filter in combination with paramedical reflectors can also allow the reliable detection of reflective objects by retro reflective photoelectric sensors.

Like through-beam photoelectric sensors, retro reflective photoelectricsensors are often selected according to the desiredrange. Because the light has to travel the path from the sensorto the reflector twice one also talks of the two-way photoelectricsensor. The light from the transmitter is, explained simply, emitted in a cone shape. This means that the cross-section of the light cone increases with rising range. This is also why a largerreflectoris needed at longer ranges than at shorter distances. The range is therefore quoted in the data sheet in relation tothe type of reflector.

6.3 Conveyor

Conveyor system is common pieces of mechanical handling equipment that moves material from one location to another. We use the inclination conveyor system In that milk packages passes from start to end due to the inclination of the conveyer. Conveyors are especially useful in application involving the transportation of heavy

or bulk material.Non-powered conveyor is typically used in truck of loading, package sorting and assembly area. Gravity is the cheapest form of conveyor but lacks in product control.

Conveyor belt is a continuous moving band made from fabric, metal or rubber used for transporting objects from one place to another mainly within the industry. A conveyor system consists of a conveyor belt, two or more pulleys that rotate around in endless loop of the conveyor belt. One or both of the pulleys are powered which causes the belt and the material on the belt forward. The drive pulley is the powered pulley while the idler pulley is unpowered pulley

VII.CONCLUSION

The work represented in this report has mainly concerned with the development of material handling system for milk packages by providing arduino as a controller to reduce the handling time and leakages of a packages.In future providing guide way, we can fill the packages in buckets, Eliminate human interferences; we can use all standard material for our project due to the increase in productivity and accuracy of all system.

VIII.ACKNOWLEDGEMENT

The authors are grateful to Prof.S.T. Nangare, Department of Mechanical Engineering, NanasahebMahadik Collage of Engineering,Peth,Maharashtra, India for his valuable support throughout the project.

REFERENCES

[1.] AgaskarAnkit Joshi Shreyas, “Arduino based industrial conveyor belt”, International journal of computer application, 2015.

[2.] Charles J. Malmborgs, “Material handling interface models of storage system design” IEEE International conference,vol.2,pp.1531-1535,1994.

[3.] Shivaram .K.R,Meghashree.S, Monica.L, “Low cost automation for sorting of objective of conveyor belt”, International journal of innovative research in science of vol.5,pp. 2319-8753,May 2016.

[4.] S.H.Masood, B.Abbas, A.K.Aara, “An investigation into design and manufacturing ofmechanicalconveyorsystem for food processing,” IEEE international conference, vol.13, pp. 551-559, June 2004.

[5.] Dimanazzal, Ahmad EI-Nashar, “Survey of research in modeling conveyor based automated material handling system in wafer fabs,” winter simulation conference vol.3, pp1781-1788, 2007.