

MILK QUALITY MONITORING SYSTEM USING Wi-Fi MODULE

Swapnil.P.Navale, Shubham.S.Kagade, Ramchandra.J.Sarwade,
Sagar.S.Pise, Prof. P.S. Togrikar



swapnilnavale9596@gmail.com
shubhamkagade00@gmail.com
rachandrasarwade03@gmail.com
pisesagar1998@mail.com

Department of Electronics And Telecommunication Engineering
S.B. Patil College of Engineering Vangali, Indapur-413106

ABSTRACT

The current generation has seen a significant rise in milk demand, which has increased the number of milk centres in various regions. Milk is the most important source of nutrition for children, pregnant women, and adults. Milk of the highest quality is dense and free of contaminants. A few adulterants are added to milk to sustain milk income and increase yield. Since farmers supply so much of the milk, there's a fair chance they'll get the information wrong if they don't know what they're doing. The consistency of milk can be harmed by these adulterants. Adulteration of milk has been a major social problem in recent years. Consumption of tainted milk can result in serious health problems. Milk adulteration must be detected, and milk consistency must be ensured. Various types of sensors, such as pH sensors, gas sensors, and temperature sensors, may be used to detect milk adulteration. This implementation is designed to make the process more apparent to all people who deposit milk. The entire milk analyser system is regulated by this Arduino. Controllers are connected to a variety of sensors. This is an easy-to-use method.

Keywords: WIFI Module, best quality, productivity.

ARTICLE INFO

Article History

Received: 23rd May 2022

Received in revised form :
23rd May 2022

Accepted: 25th May 2022

Published online :

26th May 2022

I. INTRODUCTION

In recent years, there are three major problems namely food safety, human safety and water safety. Our project is choosing to the food safety. Now a day, the need of milk for children is very important that providing good quality milk by milk quality tester. This project consists of temperature sensor can be used to measure the temperature in the milk. The pH sensor can be used to measure the pH of the milk. Humans consume milk and milk products as their main sources of nutrition. In general, dairy products are high in carbohydrates, sugar, protein, vitamins, enzymes, and minerals. However, the quality of nutrients can differ as per the breed of cow, feed, season, lactation stage, and a variety of other factors. The term "adulteration" refers to the addition of other substances in milk to increase the amount of raw milk available. Besides, contamination of milk may occur during unsanitary processing, packaging, and distribution. The most popular adulterant used for milk is water, which raises the quantity of milk while lowering the quality. The consistency of milk is also affected by various environmental factors such as temperature, humidity, and darkness. Refrigeration and vacuum storage are commonly

used to control such factors. Despite India being the largest milk producer across the world, milk consistency and hygiene are major concerns here. To avoid adulteration milk needs to be analyzed for consistency. It is common knowledge that adulterated milk is sold and consumed in India, which includes adulterants such as detergent, water, urea, starch, and other adulterants. Such adulterants lower the nutritional value of milk along with lowering its consistency. As the relation between the milk constituents is secure, it can be used to assess the level of adulteration in the milk. As per a national survey conducted across the country, approximately 68.4% of the milk samples tested did not fulfil the set milk requirement. Thus, it is imperative to monitor milk quality monitored at the dairy farm by the farmer using a clear, accurate, hand-held adulteration detection device or computer that can detect pH, FAT, odour, and other adulterants in milk.

Problem Statement

The existing problem is that to not maintain the quality of the milk and security in the milk production environment area. If not maintain the quality and security then milk

production and productivity not maintain. Thus we solve the issue using the IoT and Sensor based system.

II. LITERATURE SURVEY

Sumitra Goswami¹ and Ashok Dangi² “Arduino-Based Milk Quality Monitoring System”, a few adulterants are added to milk to sustain milk income and increase yield. Since farmers supply so much of the milk, there's a fair chance they'll get the information wrong if they don't know what they're doing. The consistency of milk can be harmed by these adulterants. Adulteration of milk has been a major social problem in recent years. Consumption of tainted milk can result in serious health problems. Milk adulteration must be detected, and milk consistency must be ensured. Various types of sensors, such as pH sensors, gas sensors, and temperature sensors, may be used to detect milk adulteration. This implementation is designed to make the process more apparent to all people who deposit milk. The Arduino controller is used in this framework. The entire milk analyzer system is regulated by this Arduino. Controllers are connected to a variety of sensors. This is an easy-to-use method.

Dr. G. Rajakumar¹, Dr. T. Ananth Kumar, “IoT BASED MILK MONITORING SYSTEM FOR DETECTION OF MILK ADULTERATION”, The work aimed to present some aspects regarding milk quality and quantity estimation. The Internet of Things (IoT) based system allows users to know the groupings of gases in crude milk continuously. As the milk is kept for several days, the expansion of bacterium will get increased which ends up in undesirable smell, style and harmful substances. Hence there is a necessity for monitoring system to discover and determine the spoilage of milk and turn out into a healthy product. Consequently, the toxic substances in milk are identified before to maintain a strategic distance from entanglements in the underlying stage for a decent last item. In this proposed system, Microbial activity is determined using gas sensor, high quality milk should have no salinity, so salinity of the milk is measured by using a salinity sensor and also level of the milk will be measured by using a level sensor. In addition to that customer should have their own card for accessing the milk diaries.

Y.R. Bhamare, M.B. Matsagar, C.G. Dighavkar, “Quantitative and Qualitative Analysis of Parameters using Arduino Controller”, This paper presents design and development of Arduino. Hema, Narmada, “IoT BASED MILK MONITORING SYSTEM FOR DETECTION OF MILK QUALITY USING SENSOR” The project presents a modern device for quality inspection of milk based on smart sensor technology. As milk is the major food for all the infants, It has to be monitored for the safety of the child. The main objective of the project is to bring out the product which determines the quality and the safety of milk for consumption. This project determines many parameters of milk by using smart sensor technology. Here, we consider parameters like temperature and pH to determine the quality of the milk. The Temperature sensor is used to determine the hotness or coldness of milk. The pH sensor is used to determine the pH of the milk. The nitrogen sensor is used to determine the protein content in the milk. The protein content can be used to determine the melamine is present in

the milk or not. All these sensors are thus inbuilt inside the case and the output is thus shown with the help of monitoring displays (LED) externally.

P. S. Ajeeth Balaji¹, G. Manisha, “Design of Milk Analysis System for Dairy Farmers using Embedded System”, This paper presents the design and development of Arduino controller based system to detect the parameters of milk. The parameters include pH, CLR and SNF. The pH sensor and lactometer are used to measure the quantity, pH and CLR of the milk respectively. Using the value of FAT and CLR the value of SNF can be calculated and studied qualitatively. The sensors are interfaced with the Arduino controller. The software developed enables to read the parameters and display them on the LCD panel. The milk quantity is displayed in litres. This is a low cost and efficient tool to detect adulteration of the milk. Also with the help of IOT (Internet of Things) process the milk industry should be able to send the real time reading information of milk to the government so that it helps to overcome the illegal things such as milk quality during the production of milk pocket.

III. BLOCK DIAGRAM

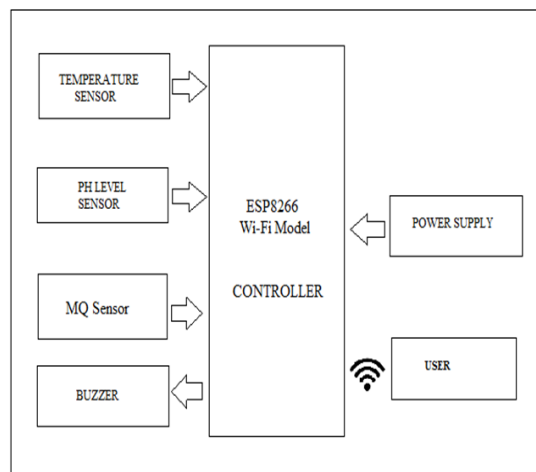


Figure:3.1 Block Diagram

DESCRIPTION OF BLOCK DIAGRAM

In this IoT system, we aimed to present some aspects regarding milk quality estimation. So, in this proposed system When the milk is stored for long, the microbial activity gets started which gives the milk a foul smell which can be detected using a gas sensor. In the existing system only the gas sensors are used for detection of early microbial activity which makes it useless when it comes to detection of adulteration of milk, our proposed system detects both aspects, adulteration as well as early microbial activity in milk. Also Ph sensor is used to check nutrients in milk. if milk condition is unhealthy then alarm will generate.

Temperature sensor: -

It is used to determine hotness or coldness of milk. The good quality of milk range is 0 C to 40 C. Above 40 temperatures then milk starts damaging.

PH Sensor: -

The PH sensor is most important part in milk monitoring. The fresh milk from cow typically has a PH between 6.7 to

7. As milk goes sour it becomes more acidic and the PH gets lower.

This occurs as bacteria in milk converted the sugar lactose into lactic acid.

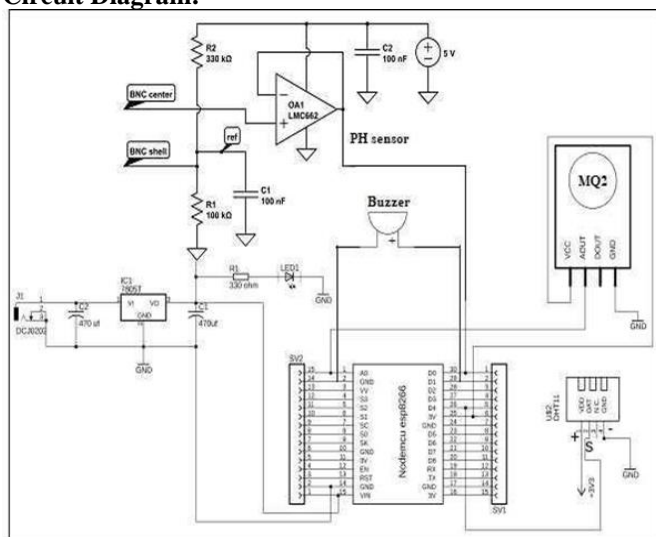
MQ Sensor: -

MQ Sensor is a gas sensor. The MQ gas sensor is commonly used to measure the methane in milk to maintain the quality of milk.

ESP8266 Wi-Fi Model:-

Esp8266 wifi model is a self-contained soc with integrated TCP/IP protocol stack that can give any microcontroller access to wifi network.

Circuit Diagram:



IV. CONCLUSIONS

Everyone in the society need to know the quality of milk before consuming it. Milk testing and quality control is an essential component of any milk processing industry whether small, medium or large scale. Milk quality control is the use of approved tests to ensure the application of approved practices, standards and regulations concerning the milk and milk products. Also check the milk production environmental temperature and gases values for maintain the milk quality using the IoT.

V. REFERENCES

[1] Priti Chakurkar; Sajeeda Shikalgar; Debajyoti Mukhopadhyay, An Internet of Things (IOT) based monitoring system for efficient milk distribution, International Conference on Advances in Computing, Communication and Control (ICAC3), IEEE 2018.

[2] P. R Kadam; K. P. Shinde, Real Time Milk Monitoring System, 978-1-5386-5257- 2/18/\$31.00©2018IEEE.

[3] Lucas de Souza Ribeiro; Fábio Augusto Gentilin; José Alexandre de França; Ana Lúcia de Souza Madureira Felício;

[4] Maria Bernadete de M. França “Development of a Hardware Platform for Detection of Milk Adulteration Based on NearInfrared Diffuse Reflection” IEEE Transactions on Instrumentation and Measurement, Year: 2016, Volume: 65, Issue: 7, DOI: 10.1109/TIM. 2016. 2540946

[5] Carla Margarida Duarte; Ana Carolina Fernandes; Filipe Arroyo Cardoso; Ricardo Bexiga; Susana Freitas Cardoso; Paulo J. P. Freitas “Magnetic Counter for Group B Streptococci Detection in Milk” IEEE Transactions on Magnetics, Year: 2015, Volume: 51, Issue: 1, Article Sequence Number: 5100304, DOI: 10.1109/TMAG.2014.2359574.

[6] Gabriel Durante; Wesley Becari; Felipe A. S. Lima; Henrique E. M. Peres “Electrical Impedance Sensor for Real-Time Detection of Bovine Milk Adulteration” IEEE Sensors Journal, Year: 2016, Volume:16,Issue: 4, DOI: 10.1109/JSEN.2015.2494624