

MILK ANALYSIS USING GSM

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ABSTRACT

India is farming country the main source of earning money is farming the side business for farmer is milk collection this collected milk is given to the dairy industry without any processing so we are making a system which will going to change the lifestyle of indian farmer dairies collect milk From farmer every day and data for this milk are stroed At sms using GSM daily bases milk weight,fat stored in farmer mobile phone indian is farming Fat Is Measured Using The Lactometer Distance Measured in Ultrasonic Sensor And Temperature Is Also Measured In This System. This Temperature Is Varies With Environment This All Information We Send To The mobile Application Using The Gsm RFID Reader Scan The Card This Number Is 12 Digits This Scanned Number Is Going On Mobile Using The Gsm In Mobile Using The Gsm In mobile Using The Gsm In Mobile Application Text Message Is Weight,fat Is Seen In Daily bases Farmer Are Easy To Find its data In Mobile The System Develops The Correct Accordance In Weight And Fat Measurement For Payment Of Farmer Billing Is Accurate Now a Day Dairy Industry The Weight And Fat Is Incorrect This Effect On The Farmer Billing The Farmer Has 10 liter milk And One Liter Milk Is Not In Reading This Effects On The Farmer Life Style On Also Billing System.

Keyword: Milk Analysis, Gsm, Lactometer, Weight Measurement, fat Measurement etc.

1. INTRODUCTION

Today the modern world is become faster & faster and other daily requirements goods are becomes luxurious. So we are making a system which will be going to change the lifestyle of Indian farmer and milk collection system. Agriculture is backbone of our country and dairy farming is joint business of Indian farmer. Dairies collect milk from farmer everyday & payments for this milk are done according to the rates per litre. This rate depends on factors like Weight and FAT of the milk. We are developing a system that will measure these parameters and calculate the payment automatically. The system consists of two units, one unit is placed at milk collection centre (MCC) that consists sensors, microcontroller, LCD, card reader & GSMs main elements. This unit collects data & store it in a database calculation of bill is made for making payment to the farmer The Dairy industry in India is generally co-operative .The primary milk provided to the dairy are farmers who do not process their milk and give it in the raw form to the co-operative dairy. Since more number of farmers are depositing their milk in the dairy, it is a daily task of the dairy to assess the quality of milk from each farmer, verify it & meets the quality norms specified and make payments based on quality and quantity of milk. Though several tests are available for quality assessment of milk like the content of protein, water, detergent, lactose, etc. Most dairies use only the fat content test to judge milk quality. Standard ranges of fat content of milk are specified by the government and it is necessary for the milk to satisfy this quality norms. In measuring fat content we have used the principle of optical scattering of light by fat globules present in the homogenized milk thus diverting totally from the usual method of separating the fat by burning it with acid, centrifuging it and measuring on a calibrated scale. Use of smart card is an additional feature of this project & each farmer is provided with a unique ID number. The daily transactions for each farmer are sent to

their mobile over the SMS. A smart card reader is installed near the machine. The milk collection system is equipped with a weighing scale can sense quantity of the milk from farmers.

2. LITURATURE SURVY

A. S. Saravanan, et al. (ICICCS, 2021). "Smart Milk Quality Analysis and Grading Using IoT". [1]

In this Paper, analyzing the milk of each depositor and maintaining the data manually is a huge challenge. The solution to this issue can be found in this notion. Their aim is to develop and put into use a microcontroller-based system for monitoring and assessing milk parameters. pH, CLR and milk yield are some of the factors. Various sensors are used to measure these variables. To determine milk purity, many dairies rely solely on inaccurate CLR and fat content tests. However, with this concept, the milk may be rated based on any milk parameter value. The cost will be automatically computed when the milk's quality has been determined. The database will then be updated with every aspect of the milk's price. The user may quickly obtain it via the straightforward mobile application whenever they need it. In the future automated world, this method will be highly helpful because it is inexpensive and efficient.

ShubhangiVerulkar, et al. (JETIR, 2019). "Milk Quality and Quantity Checker". [2]

Authors described an users may verify the quality and amount of milk using an Internet of Things (IoT)-based system. The spread of germs will accelerate, and the milk will have an un-favourable odour if it is kept in storage for a number of days. The health of humans is seriously endangered by these tainted milk-producing bacteria. In order to stop future diseases, society urgently needs milk surveillance. Consequently, a monitoring system is required to find and identify milk deterioration. By using a variety of sensors to keep an eye on the milk characteristics, this work illustrates a unique method of milk quality testing.

3. COMPONENT USED

3.1 Arduino Uno board – ATMEGA328P:The Arduino/Genuino Uno has a number of facilities for communicating with a computer, another Arduino/Genuino board, or other microcontrollers. The ATmega328 provides UART TTL (5V) serial communication, which is available on digital pins 0 (RX) and 1 (TX). An ATmega16U2 on the board channels this serial communication over USB and appears as a virtual com port to software on the computer. The 16U2 firmware uses the standard USB COM drivers, and no external driver is needed. However, on Windows, a .inf file is required. Arduino Software (IDE) includes a serial monitor which allows simple textual data to be sent to and from the board. The RX and TX LEDs on the board will flash when data is being transmitted via the USB-to-serial chip and USB connection to the computer (but not for serial communication on pins 0 and 1). A Software Serial library allows serial communication on any of the Uno's digital pins.



3.2 Temperature sensor – DS18B20:The DS18B20 is a small temperature sensor with a built in 12bit ADC. It can be easily connected to an Arduino digital input. The sensor communicates over a one-wire bus and requires little in the way of additional components. The sensors have a quoted accuracy of +/-0.5 deg C in the range -10 deg C to +85 deg C.



3.2.1 Lactometer/Hydrometer: Operation of both is based on Archimedes' principle that a solid suspended in a fluid will be buoyed up by a force equal to the weight of the fluid displaced. Thus, the lower the density of the substance, the farther the hydrometer will sink.



4.Loadcell HX711– 3Kg: load cell converts a force such as tension, compression, pressure, or torque into an electrical signal that can be measured and standardized. It is a force transducer. As the force applied to the load cell increases, the electrical signal changes proportionally.



5.Display-

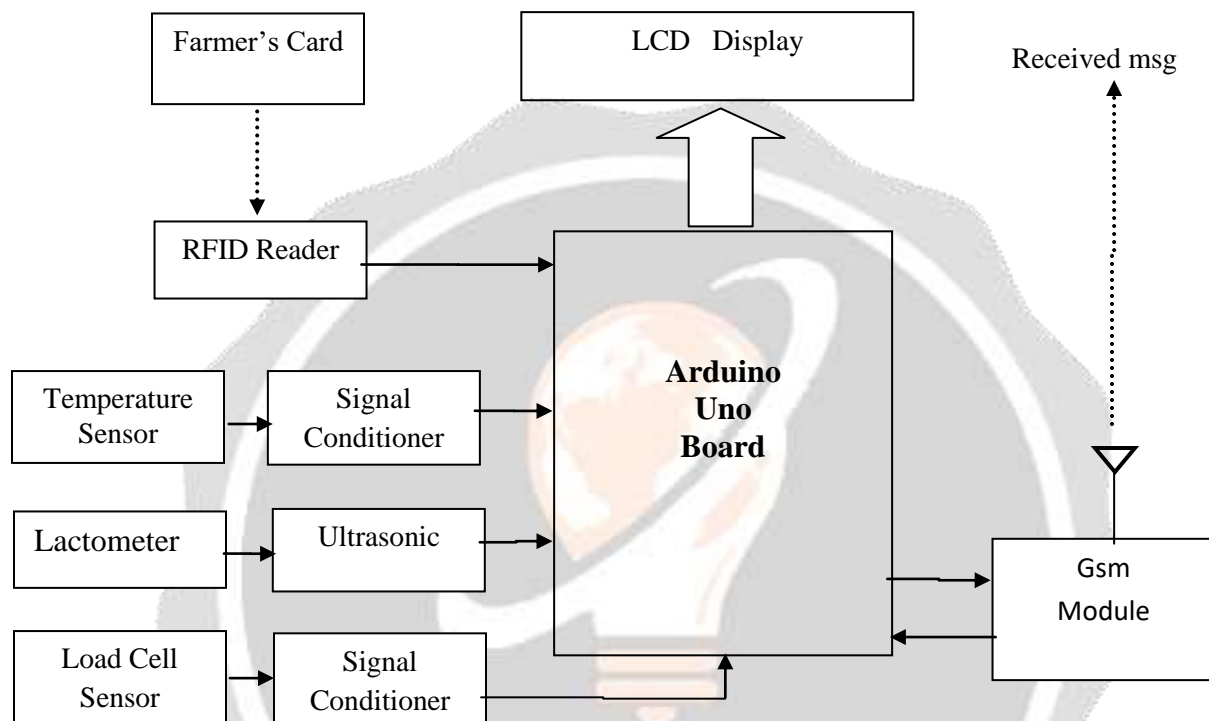
module, there are four rows in display and in one row twenty character can be displayed and in one display eighty characters can be shown. This liquid crystal module uses HDD44780 (It is a controller used to display monochrome text displays) parallel interfacing.



6.GSM Module -SIM900:The SIM900 GSM/GPRS shield uses UART protocol to communicate with an Arduino. The chip supports baud rate from 1200bps to 115200bps with Auto-Baud detection. With the help of jumpers you can connect (RX,TX) of the shield to either Software Serial(D8,D7) or Hardware Serial(D1,D0) of the Arduino.

7. RFID card reader – 125KHz: Commonly known as employee badges or hotel room cards, ISO Cards of LF 125 KHz are commonly used for access control & security needs.

4. BLOCK DIAGRAM



5. METHODOLOGY

The basic components of this system mainly consist of -

- A) Milk parameter measurement.
- B) RFID Card
- C) Auto SMS

The Figure shows block diagram of Milk collection center & it mainly consist of following component.

- 1) Sensors
- 2) Signal conditioning
- 3) Controller board
- 5) Display
- 6) Card Reader

- 1) Sensor block: The sensor block contains sensor assembly, which includes sensor for measuring weight and Fat of the milk.
- 2) Signal Conditioning: Signal conditioning circuit convert sensors output into standard form so as it is acceptable by ARDUINO.
- 3) Microcontroller: All the processing of the signal, calculate fat, billing, and display is done by the microcontroller. The microcontroller used is ATMEGA328P.

- 4) LCD: LCD is connected to the microcontroller to display the milk parameters and the user ID number.
- 5) GSM: it is used to send the milk fat and milk weight to the user over the SMS. Smart card Reader: Here we are using RFID tag and RFID card reader.

6. CONCLUSION

This project, presented a cost effective, highly portable milk collection system using single module solution with GSM connectivity for sending SMS to the farmer. It collects milk and stores the data. Here we use a lactometer, temperature sensor and the weight sensor to collect the important data about the milk. In future, this system can also be modified and used for various collection processes. In future we can use high speed wireless internet connection to transfer the data to a server where it can be stored and analyzed.

7. REFERENCE

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