

MILK ANALYSIS SYSTEM FOR DAIRY FARMERS USING LIGHT SOURCE TECHNOLOGY AND INSTANT BILLING SYSTEM

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Abstract: dairy industry is largest industry India which collects milk from farmers and produce various products. The embedded system used to make life easier and faster. In proposed system will make the collection from farmer and gives proper justice .In this system we collect milk from farmer by giving one time password for security purpose. The contains of milk like fat, temperature and quantity will be calculated .According to values the proper billing will be given to farmer. Also the data will be saved in respective collection center .The billing details will be send to the farmers mobile number.

Keywords: level sensor, microcontroller, LDR, LED, temperature sensor.

I. INTRODUCTION

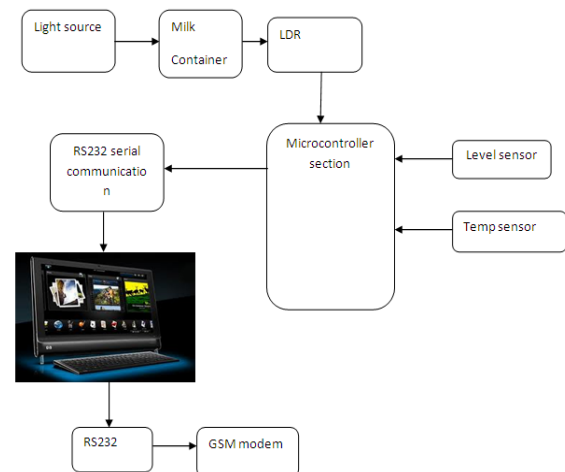
In recent years the milk production in India is quadrupled. This increase in production of milk makes India world's largest milk producing country. And dairy industry plays vital role in mass production of the milk. The farmers are the primary source of dairies as they are the milk providers. Farmer daily provides the milk to dairy and dairy will give the money according to milk collected. As this collection process is very big the use of embedded system makes it fast, easy and secure. The Milk is get collected by Farmers at the Milk Collection Centers. A unique ID number (OTP) is given to each farmer. After entering that unique ID number a sample of milk is taken for evaluation of the FAT and temperature of the milk. Also weight of milk is measured with the help of the level sensors. By taking consideration of all measured contents the rate of milk is decided by the software automatically. And Information is stored in the PC. The total bill obtained is send by the message to the individual farmers mobile phone using GSM technology. This causes accurate and fast billing of milk and also avoids the contamination of the milk.

Existing system: The existing system deals with manual collection and calculation of milk. The result obtained in this may be inaccurate .Quality is major problem for cooperatives .The time required for this collection is more so the nutritive values of milk will be decreased ,milk will be spoiled. The billing will be unfair for the farmers. To avoid all this drawbacks the accurate analysis will be required therefore we go for proposed system.

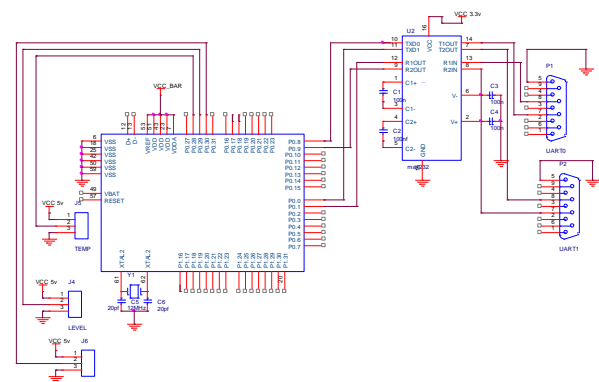
Proposed system: In this we design smart collection system. Once the user is entered in collection center, the one time password will be given to user on his mobile number. That OTP and generated OTP will be verified. If both will be matched then only user will be accessed. After pouring the milk, level sensor measures the quantity of milk. The sample

will be taken for measurement of fat and temperature .The LED and LDR are used for measurement of fat in milk. Depending on light fallen on LDR the fat content will be measured .More the light passes through the sample of milk less will be the fat and less light is passes through the milk more will be the fat. The temperature sensor senses the temperature of milk. The measured values will be send to PC through microcontroller for further calculation. The calculated bill will be stored in PC and also sends to GSM module.GSM module sends the calculated bill to user's mobile number.

II. PROPOSED METHOD BLOCK DIAGRAM



III. PROPOSED METHOD CIRCUIT DIAGRAM:



1) LDR sensors: Light dependant resistors are used to detect light levels. As per the intensity of light the resistance of the LDR increases or decreases. In bright light, the resistance of an LDR is low, and more current can flow through it. In dark the resistance of LDR is high and less current flows through it.



Intrinsic and extrinsic photoresistors are the two types of the LDR. Intrinsic is made up of undoped and pure semiconductors while extrinsic is made from doped and impure semiconductor.

2) *Temperature Sensor:* The conversion of temperature values to the electrical value is done by the temperature sensors. The correct measurement of temperature is done by the temperature sensors.



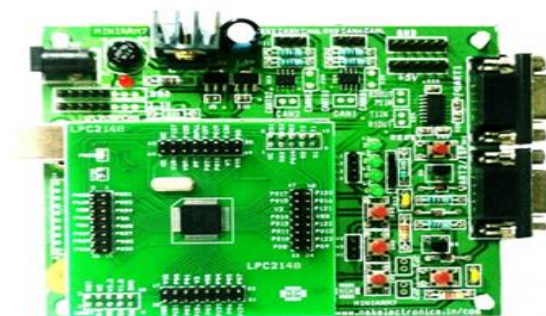
LM 34 is a temperature sensor used to detect any small change in temperature with high operating range. The main advantage of the LM34 is that the output voltage changes linearly with the Fahrenheit temperature. It is a basic Fahrenheit temperature sensor ranges in -50° to $+300^{\circ}\text{F}$.

3) *Level sensor:* Level sensors are used to measure the level of liquids and other fluids. The fluid which is to be measured is taken in the container and level sensor senses the level of that material either continuously or with point scales.



Continuous level sensors identify clearly the level of material and gives the appropriate value of that material present in the container. While the point level sensors indicate the level of material is above or below the specified point.

4) *ARM microcontroller:* Advance RISC Machine (ARM) is a series of low cost and most power efficient microprocessors. ARM has several microcontroller families such as ARM7, ARM9, Cortex-M3. ARM 7 is one of the widely used family in Embedded system application.



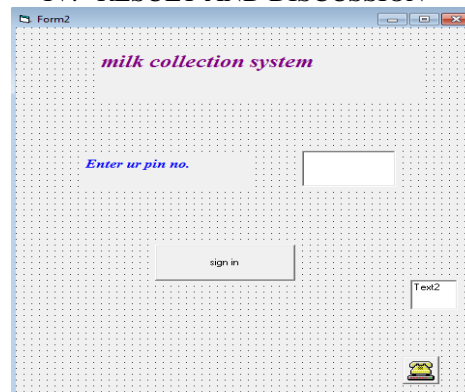
Here we are using LPC2148 series of ARM7. LPC 2148 series have two UART, UART0 and UART1. This is used for interfacing the microcontroller with the PC. RS232 serial communication is used to transfer the data between microcontroller and PC. So that the data processed by the microcontroller will get displayed on the PC.

5) *GSM module:* GSM module is used to establish communication between a computer (can be microcontroller or microprocessor) and a GSM. GSM stands for Global system for mobile communication.

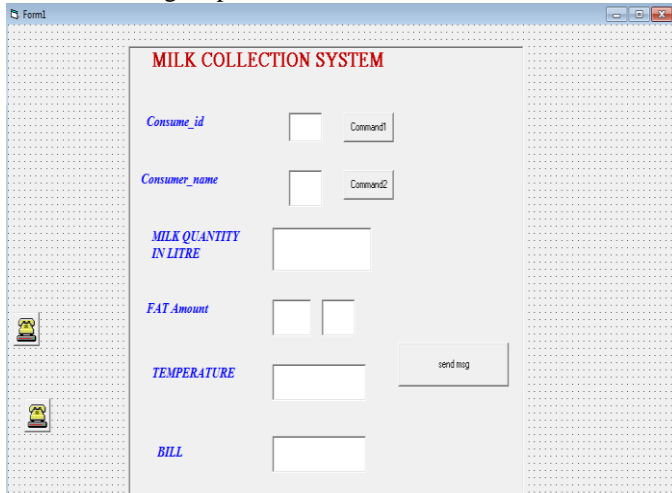


The advantage of using GSM modem is that we can use its RS-232 protocol to communicate and advance the embedded application. The GSM modem can be connected to Personal computer by having serial port directly. The GSM modem can be connected to microcontroller through MAX232IC. GSM modem can be used in GPRS mode where we can connect to internet. The GSM modem is highly adjustable and plays quad band SIM900A so that we can have easy and direct integration to RS-232 applications.

IV. RESULT AND DISCUSSION



In fig 1. the form is displayed in which after sign in the unique ID will get send on farmers mobile phone. After entering that ID form 2 will get opened.



In fig 2. the form is displayed in which after clicking command1 the consumer Id and consumer name will get displayed which is already entered in excel sheet. Then switch on the microcontroller and other details on the form such as milk quantity, FAT amount, temperature and bill will get displayed automatically. Then after pressing command 2 on form the data will automatically saved in the excel sheet and message to consumer can be send after with the “send msg” tab on the form.

V. CONCLUSION

In this paper we developed a system which gives faster and more accurate result .Due to system user get exact amount as per the quality and quantity of milk. Use of ID makes the system more secure for user and management .Data will be stored and can be easily access.

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