

RATION WHIZ

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Abstract—

The paper is about a new automated machine called Ration whiz, which is going to modify the way of rationing and fights back at corruption by implementing automation in Public Distribution system (PDS) using PLC microcontroller and RFID interfaced using RC232. This system enhances the way of rationing by replacing the conventional ration card with the food card. The food card is used to access the Ration whiz that has the operational interface more similar to that of the ATM. By implementation of this system the standard and quality of service is guaranteed and the database of all Ration whiz's across the state is synchronized using GSM module thus giving the power to people to access their card at any Ration Whiz.

Keywords— PLC microcontroller, RFID, Food card, GSM module;

I. INTRODUCTION

India's Public Distribution System (PDS) with a network of 4.78 Lakh Fair Price Shops (FPS) is perhaps the largest retail system in the world. Major problems due to this system are the inefficiency in the targeting of beneficiaries and the resulting leakage of subsidies. The PDS system today supports over 40 crore Indians below the poverty line with monthly supply of subsidized food grains. The government allocates funds for the public distribution scheme. The scheme aims to provide food grains and commodities to poor people at affordable prices. The government sources produce for the system from farmers; it sets a minimum support price to do so. The advantages of automation application at distribution level are distribution automation enhances the efficiency and productivity of a utility, and also provides quality and reliable supply to the consumers.

II. NEED OF THE RATION WHIZ

Operational & Maintenance benefits:

1. Improved reliability by reducing outage duration using auto restoration scheme

2. Reduced man hour and man power
3. Accurate and useful planning and operational data information
5. Better fault detection and diagnostic analysis
6. Better management of system and component loading

Financial benefits:

1. Increased revenue due to quick restoration
2. Improved utilization of system capacity
3. Customer retention for improved quality of supply.

Customer benefits:

1. Better service reliability
2. Reduce interruption cost for
3. Better quality of supply
4. Ensuring standard of service

III. OBJECTIVES

The Government of India is having a UID (Unique Identification) number system called AADHAR number, which contains all general information like age, count of family, finger print of the family, address, contact numbers, bank account information etc. for every resident in the country. Using the AADHAR number and the Personal details, the Government can issue a card called The Food card to the individuals, containing information regarding quality and quantity of products allotted to him/her in a respective ration shop via synchronized database. People who are accessing the ration shop for subsidies in the cost of products would allot a food card that is electronic ration card.

The automatic rationing system, installed at the ration shop which contains three interfaces namely touch screen, billing printer and GSM. All these interfaces are interfaced to the advanced microcontroller. PLC

Microcontroller is interfaced to the PLC and further to the central database of the government. The person would have to swipe the card on the system placed at ration shop counter and have to pass out of finger print recognition. After that for security authentication and to prevent card misuse, the system would ask for the

AADHAR number and the finger print detector detect the correct consumer.

Once authenticated, ration whiz would get updated information regarding the existing subsidies for the current user in the touch screen.

The inputs are given by the consumer and select the products by the consumer itself in the touch screen. From the touch screen inputs are given to the microcontroller unit, which are given to the PLC module and the products are obtained from the automated ration shop. Further to prevent irregularities in distribution of ration, government can supply various products (like rice, wheat, kerosene, sugar etc.) to rationing shops in the form of sack stored in the container. Central database would be updated immediately after every transaction made by the users.

IV. IMPLEMENTATION METHODS

Entire Ration whiz can be divided into two parts:

1. Hardware
2. Software

The hardware of this system can be further subdivided into three parts:

The Food card reader interfacing with microcontroller (AT89C51) and

PC: The RFID based smart-card reader is connected to microcontroller and PC via RS232.

2. Microcontroller system and PC: This is an assembly which is placed in between smart card reader and GSM module. It is used to establish the communication between smart card reader and GSM module.

3. GSM module interfacing with microcontroller: Here the GSM module is used to exchange the information in form of SMS between microcontroller assembly and central database provided by the Government. This ex- changes the

information which is required for user authentication as well as for other details.

The software demands for this system are as follows:

The smart card reader should be able to send commands to microcontroller when there is a smart-card detected.

On receiving commands from smart-card reader the microcontroller should be able to send commands to GSM module to send messages to the central database.

GSM module should be able to receive messages from government database and using software it should be able to store/forward it to microcontroller.

PLCs are well adapted to a range of automated tasks. These PLC (Programmable logic controller) are used in this system. These are typically industrial processes in manufacturing where the cost of developing and maintaining the automation system is high relative to the total cost of the automation, and where changes to the system would be expected during its operational life. PLCs contain input and output devices compatible with industrial pilot devices and controls; little electrical design is required, and the design problem centers on expressing the desired sequence of operations. PLC applications are typically highly customized systems, so the cost of a packaged PLC is low compared to the cost of a specific custom-built controller design.

Weighing machine used for weighing are interfaced with the computer via RC232. These are precisely engineered with hi-tech machines such as micro - processor & IC based circuit to ensure a high level of accuracy and efficiency.

User have to enter the amount of Kg he want to withdraw. System checks his account. If the user will have sufficient balance to withdraw the current amount, system will open the valve. Through valve grain will come and it will get weighted by weight sensor. Once the count reached the entered amount controller automatically shut down the valve and update the account of the customer .The updated account information is send to the customer's mobile using GSM module. In this system the data

base of customers can be made with their account details, password etc.

Even an object sensor is placed at the dispatcher section to ensure that the food grains are not wasted.

V. IMPLEMENTATION DIAGRAMS

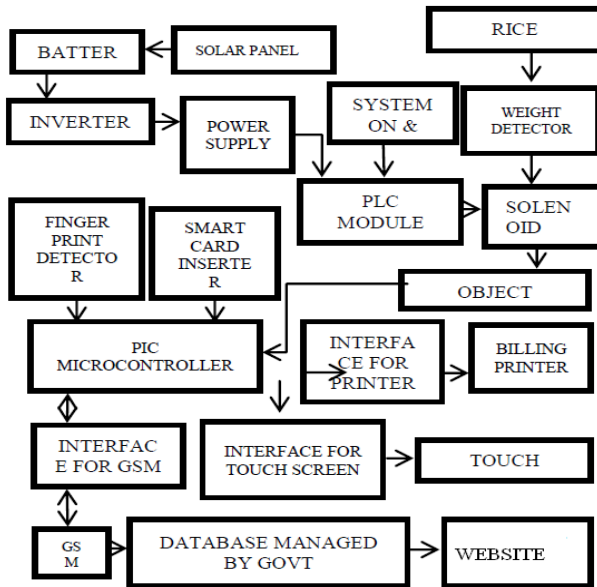


Figure 1: The outline of Ration whiz

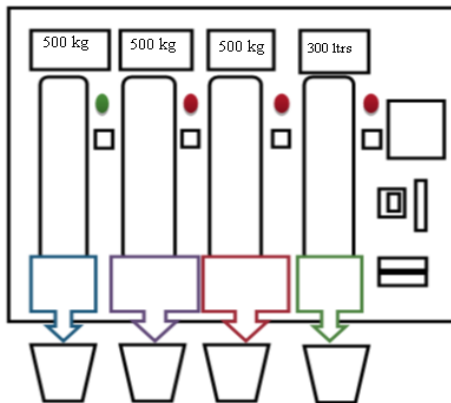


Figure 2: Weighing section model

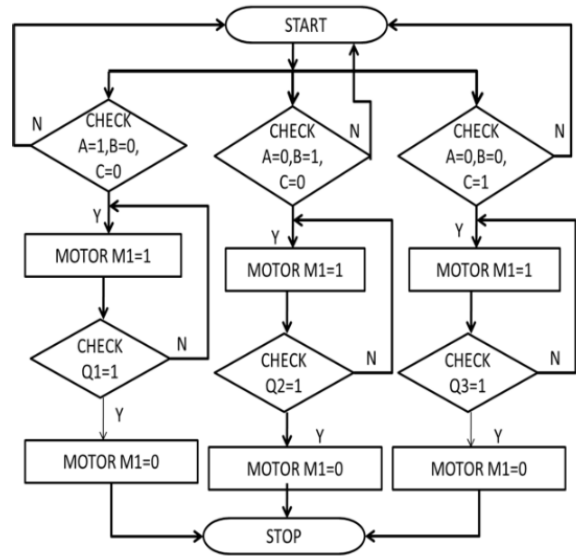


Figure 3: Flow diagram of weighing section

VI. IMPACT OF RATION WHIZ

Corruption amount of about 358 crore per/year in the Government and market sector of PDS can be reduced if this system becomes automated.

People are given power to fight back corruption.

Cost effective approach.

Time saving approach.

This system helps to maintain the database properly.

Standard of service can be assured.

Ration whiz can be eco-friendly by using solar power.

Traffic at ration shops can be reduced with the dual system.

The food card can be accessed across the state 1 time a month

Account transactions can be viewed online in the government provided website for a greater interface with the PDS.

VII. CONCLUSION

This proposed method can provide a safe, secure and efficient way of public distribution system. By using this technique PLC based automated ration shops solves the problem of manual process in PDS. This Ration Whiz definitely paves way for a corruption reduced India in the future.

VIII. REFERENCES

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