

# Ration Transfer Machine (RTM)

C.Kishorekumar<sup>1</sup>, S.Veeramani<sup>2</sup>, R.Vinothkumar<sup>3</sup>, A .Karthik<sup>4</sup>

UG Students<sup>1,2,3,4</sup>, Department of Electronics and Communication Engineering,  
Sri Shanmugha College of Engineering and Technology, Sankari, Salem, TamilNadu.

**Abstract -** Ration Distribution System means distribution of essential commodities to a large number of people. It is done by the government. Public distribution system is one of the widely controversial officers that involves corruption and illegal smuggling of goods. All these happen because every job in the ration shop involves manual work and there are no specific high tech technologies to automate the job. Our main objective here is to automate the process of the distribution. The classical method involves customer to tell the person handling the ration shop outlet, the amount of the commodity he/she needs and the type too. The person working then measures the commodity and gives it to the customer. In our version of the system, we will develop an embedded system project where we will have the customer to input the amount he requires and the system made will automatically collect that much amount in a container. It is a new concept which takes into account the various social, economic and general aspects relating to technical as well as day to day disciplines. The advanced Ration Distribution System are termed as “RATION TRANSFER MACHINE”. The rationing material distribution system is one of the controversial issues that involve mal practice in existing system. and also chance for the illegal usage of products i.e. the material robbed by making wrong entire sin register without knowledge of the ratio hard holder. In this paper implements a PDA device (personal data assistant) is similar to ticketing machine used to swipe the customer's mart card & billing the amount. The proposed system replaces the manual work in ration shop to automatic ration shop for public distribution system based on Radio Frequency Identification (RFID) for the purpose of consumer Id verification.

**Index Terms—** Microcontroller, Fingerprint Scanner, GSM, RFID, Motor, Solenoid Control Circuits, Mechanical Part.

## I. INTRODUCTION

Planning Commission had followed to say on PDS system in 2005 reports. In India, Public Distribution System (PDS) is the largest economic control in a world. This distribution of ration is controlled and it monitored by central government, along by the state government. But it has so many type of limitations. PDS provides an order or authority to the State Government for purchase materials like rice, sugar, wheat, oil, kerosene. When the state Government

issues the ration cards like yellow card, saffron card and white card of ration card in ration shop it will depending on our annual family income. In yellow card (BPL) card families with an annual income up to Rs.15000 the government provide the 35kg of grain every month. In saffron card families, an annual income up to Rs.15000 to Rs.1 lakh the government provide the 15kg of grains. In white card families are earn annually over Rs.1 lakh, the government is not entities to food rations. The consumer can scan for finger by fingerprint machine. It will match, to show the customer details for its avoided the malpractice. Then verify the consumer Id number. Once consumer is validated by ID number, the system asks the consumer to select appropriate material and quantity of material through keypad. Founded on material chosen by consumer, will be activated and consumer gets material. Dc motor or solenoid produces rotary motion.

A Dc motor speed controlled over wide range, using either a variable supply voltage or by current. The ends wire winding are connected to an accumulator. When the electric current passes through a coil in magnetic field, the magnetic force which produces a torque it turns the DC motor Thermal printer can print the ration materials distribution with the amount among the white or black rolling paper to the consumer for identify of materials. GSM interface with the PIC microcontroller sends information in the form of SMS to people. The proposed RFID based automatic ration shop system would consume transparency in public distribution system and its helps to prevent and avoids the malpractices. The various module such as GSM, RFID, RTC, LCD, Keypad and verification. If thumbprint is not matched the consumer, consumer is not correct so Thermal printer are interfaced to it form a complete PDA. GSM interface with the PIC microcontroller sends information in the form of SMS to people. The proposed RFID based automatic ration shop system would consumer transparency in public distribution system and its helps to prevent and avoid the malpractices. The various module such as GSM, RFID, RTC, LCD, Keypad and thermal printer are interfaced to it form a complete

PDA. In Fig.1 shows the system block diagram based on RFID technology. System consists of PIC microcontroller, RFID, GSM, motor driver, solenoid valve circuitry, Thermal printer, LCD and keypad. The proposed system which demonstrates the distribution of solid materials grains like wheat or rice and liquid material like kerosene. The PIC microcontroller act as flash and EEPROM memory, general purpose I/O pins. RFID reader with RFID tags and keypad, Fingerprint acts as inputs to system and LCD is used for displaying ration stock of materials for distribution. thermal printer can be used to print the ration materials details. GSM used to transfer the information to consumer. by using GSM can send information of ration material way consumer.

## II. PROBLEMS IN EXISTING SYSTEM

The Planning Commission (2008) has estimated the rate of the TPDS (Targeted Public Distribution System) rice and wheat is leaked. Hence, more than half (54%) of the grain taken off for the TPDS disappeared before it reached buyers in the FPS. Moreover, the leakages have increased compared to 1993-94 and 1999-2000, and are estimated at 28%. That about half the TPDS grains is leaked before reaching consumers reflects inefficiency, corruption and theft on a gigantic scale Some of the problems which consumer experience in local ration shops are

- 1) Need to wait in queue: Consumers need to wait in queue for their turn leaving their works.
- 2) Time restrictions: There will be time restriction of supplying on few hours in the

morning and afternoon. There will be no ration shops to supply goods on special occasions like national festivals

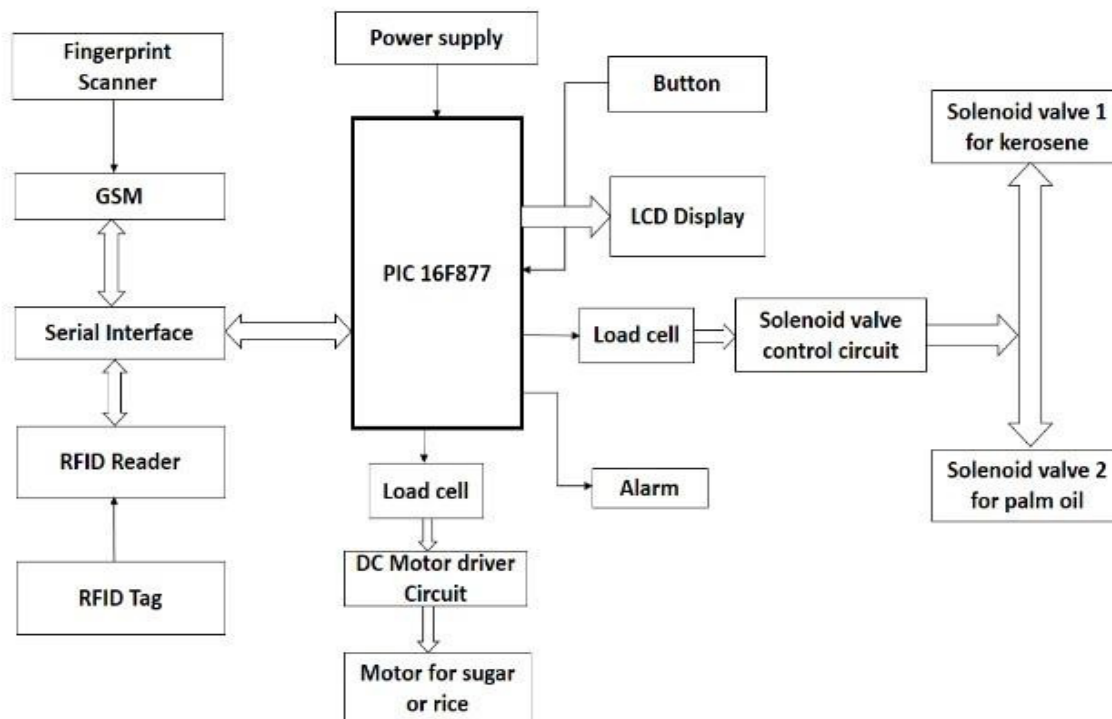
- 3) False weights: People at ration shop supply lesser good than actual measurement to consumers.

- 4) Adulteration: This is the major disadvantage of PDS system where they can increase goods by adding adulterants. This reduces the quality of goods. Even few adulterants cause disorders.

- 5) Misuse of ration cards: People misuse others ration cards when they need goods at fewer prices. For their benefit they take ration card from others and get ration in the ration shops

## III. METHODOLOGY

The PIC microcontroller is used to control the RTM machine. LCD display unit is used to display the options and the keypad for selecting the options. Solid and liquid pouring unit are output to draw the goods. This project consists of power supply unit, LCD display, keypad, solid pouring unit and liquid pouring, output controlled by PIC microcontroller. A power supply is a device that supplies electric power to an electrical load. We have power supply of 230V AC and 12V DC for constant supply. Solid pouring unit, one of the output unit, which consists of, Storage unit with valve, Load cell, H- Bridge. Liquid pouring unit, another output unit, consists of flow sensor, which controls the flow of liquid and the liquid pump.



#### Block Diagram

#### IV. WORKING PROCEDURE

Firstly, keypad provides a means to enter and select the option by user such as, to enter password, to select the commodity and quantity of the same. LCD display serves as the mediator between PIC microcontroller and keypad by displaying options. In this we have used two power supply, one is 230V AC supply to run water pump and another 12V DC adapter which in turn step down to 5V. PIC is the brain of this RTM machine which controls and co-ordinates the functional activities of secondary elements.

The working steps of overall process are listed below:

Step1: When user starts the process, it asks password, on verification of password it display profile of the user.

Step2: It will then displays the available commodities with quantity of his/her account.

Step3: Now user has to select the commodity and the quantity that he/she wants to draw.

Step4: Assume that user selected commodity is kerosene/Wheat, then it will check whether this is available and user entered quantity are permissible. Also

it will check for available balance amount in user account.

Step5: If all conditions are met, then it will activate the relay which will switch 230V power supply to the water pump for liquid.

Step6: The liquid pump will drift the liquid from the source. The flowing water will make wheel in the flow sensor to rotate. For example, if entered quantity is 1 liter, then 230V power supply is switched to water pump until wheel rotates for 305 turns.

Step7: After successful transaction, it will display "Transaction Successful" and it will deduct quantity drawn and amount of it, from the database. It will send the message to the user.

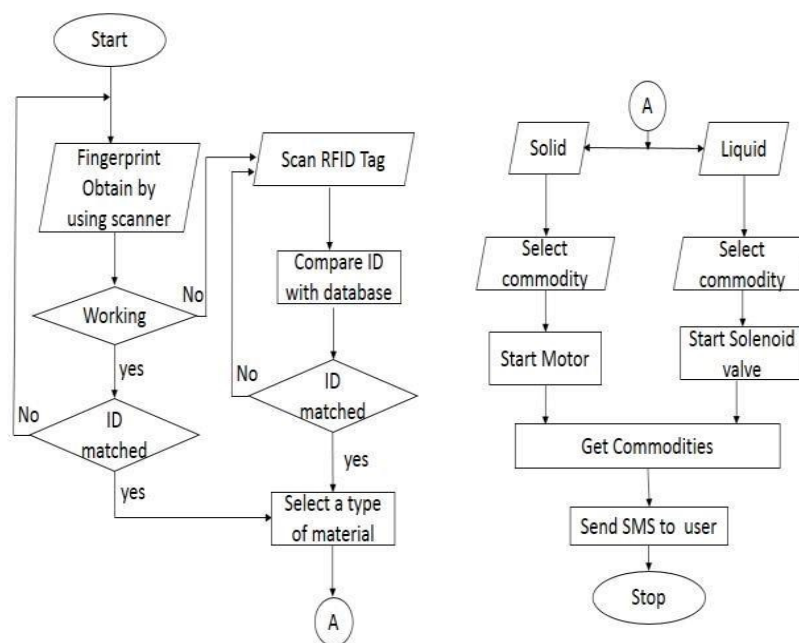
Step8: If transaction failed due to no stock or less balance than entered, also if wrong password entered, then it will display "Transaction Failed".

Step9: For solid, If all necessary conditions are met (step5), then 5V DC supply is given to DC motor via H-bridge. This makes DC motor to rotate in clockwise direction. It will do so, until valve get interrupted by IR sensor which is used to stop the valve.

Step10: As valve gets opened, ration gets poured into container with required amount chosen. Wheatstone bridge of load cell gets decreased, which in turn results

in decrease of voltage i.e. analog output voltage get decreased. Since the output voltage of load cell is in terms of mill volt.

### FLOW CHART



The output of this amplifier is given to inbuilt 8-bit ADC in PIC controller. If the user wants to draw 1kg of wheat then valve is open until ADC counts get increased by 17. Similarly for 2kg, 3kg, or 4kg, the count will be 34, 51, and 68 respectively as tested. Then the valve is closed by anticlockwise rotation of DC motor via H-bridge, the valve is interfered by limit switch. Thus transaction completes. If the user is willing to check the available balance in his/her account. Then enable to this, provision is made to choose exit option. On each and every transaction only 10 seconds' limitation is added. This is to avoid hanging of program control at any point. For example, when user has to enter password, he has to do that interaction within 10 sec else transaction fails. This occurs even when user fails to enter required quantity of ration. The 10 seconds interaction time limitation is achieved by using internal interrupt. Here interrupt will occur 50 times for every 1 second. On every occurrence of interrupt, temporary count will get incremented by 1. It will also require updating the ration and kerosene balance in the beginning of every month. With this prototype, we have considered a period of 10 minutes. After 10 minutes, available balance of wheat will reset to

30kg and kerosene to 5 liters. To achieve this also, internal interrupt is used in software code, which has no effect on PIC microcontroller. Finally, still noticeable thing that mode of payment. We had partially implemented this concept by assuming a government supervisor can update the amount. We have provided two level of authentication password to him, after that the supervisor can update balance amount of user through their IDs.

### V. FEATURES

- 1) Avoid people from being cheated:
- 2) People can get their ration at their convenient timings
- 3) Completely automated system
- 4) Elimination of duplicate and bogus ration cards
- 5) Increased adulteration in consumes can be prevented
- 6) This system helps to maintain the data properly
- 7) This system is very accurate, simple and low power consumption, which is used for real time

application

- 8) Bring Transparent
- 9) Avoid people from being cheated: In present ration shops the shopkeepers are
- 10) Involved in various malpractices like adulteration, false weights etc., this can be avoided to certain extent.
- 11) People can get their ration at their convenient timings: Since this project provides ration availability at all time. So people need not to wait to get the ration. When they want they can access their ration.

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## VI. APPLICATION

- 1) It is concerned on automation of process involved in ration shops which are the part of public distribution sectors (PDS) and digitalized it
- 2) It can be implemented in all the ration shops to help people not be cheated
- 3) This new technology gives solution and this research work will make a great change in PDS and
- 4) Provides benefit to the government by sending current stock information
- 5) Milk dispensing system
- 6) Water distribution system
- 7) Fertilizer and micro-organism dispensing system in agricultural
- 8) Water distribution system: In water dispensing system the water is obtained by inserting the card or the coin when the card/coin is inserted the data with respect to particular person is available based on the quantity available the water is withdrawn.

## VII. CONCLUSION

In this paper we are proposing new modern system to weight of ration winding. Using this proposed modern system we can have better management of the ration distribution system Govt can have indirect check on the availability of the ration to the beneficiary. It is transparent and has control over prices of some commodities in the open market, dealer will not be able to keep fake ration cards with them system helps to modernize traditional rationing and combat corruption up to great extent.

## VIII. REFERENCES

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