

Wireless Automatic Meter Reading System

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Abstract—

The main objective of the project is to develop an energy meter to know the exact billing that each load is going to consumed with wireless technology. For this research work we had taken a energy meter. The reading of the energy meter is also sent to the cell phone of the user by a message through RF modem.

The disadvantages of traditional meter reading system such as error in reading, inaccuracy, external condition affecting readings, delayed work we have implemented WAMRS.

This system perform a tasks such as taking meter reading, distribution of bills, sending notice, cutting and reconnection of flow automatically.

Keywords—

digital meter, wireless device, dongal.

Introduction-

The traditional meter reading system has many disadvantages is overcome in wireless automatic meter reading system. one of the developed product consist of the meter reading system based on digital processing of the radio frequency transmission. Traditionally , the electricity meters are installed on customers home and the consumption information is collected by meter readers on their monthly visit to their home.

Using WAMRS can supply many capabilities such as efficient meter reading, distribution, power monitoring and control , load management and time of use rate. Sometimes the meter are installed in inside people homes and if the customer is not

at home, the meter reader can not record monthly consumption and the company has to consider the average bill amount of the previous month as an indicator. This result is in burden for customer and the electricity supply company.

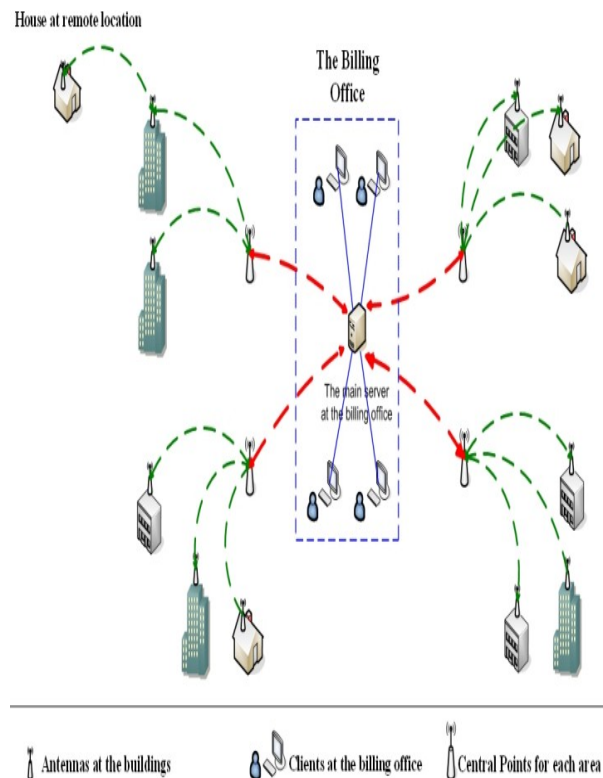


Fig-Overall global view of WAMRS

Dissatisfaction of some customer who consider meter reader entrance to there homes as of their privacy. In order to overcome this disadvantages of the traditional meter rading system. WAMRS provide information to the customer for efficient use of the utilites.

Radio Frequency Network-

Radio frequency based AMR can take many forms. There are both two-way RF systems



and one-way RF systems in use that use both licensed and unlicensed RF bands. The Meter attached transceiver and the reading transceiver both send and receive radio signals and data. This means the reading device can be a receiver only, and the meter AMR device a transmitter only.

Design of WAMRS-

An overall global view of WAMRS is shown in Fig. 1. The main goal of WAMRS project was to send periodical readings of an electricity meter wirelessly to a server in the billing office of the electricity supply company.

There were central points covering each geographical area. Since each premises unit would have limited range of wireless coverage, while the central points would have long-range wireless transmitters that could deliver the meter-reading data over long distances to the billing office.

System Modules –

- System Monitor
- Operation manager
- Automated reading manager
- .Master communication manager

1) System monitor- Admin Responsible for the application startup and correct operation of both the operative system and the application. This module checks on the different tasks to verify their state. This Module maintain the user registration and maintain the details of user and their associated Bill .It also Maintain the Database for the employees .Employees database have whole detail like address and Post and sector of working. Any new employee can be added and delete as required and database will be updated. If they don't seem to respond for a stated period of time the watchdog reboots the system. It also checks that the interface with the Internet is up.

2) Operation Manager- Automated Wireless Meter Reading System for Monitoring and Controlling Power Consumption interface for transmitting the data from the controller to the

System. The user can obtain the status of the energy consumption and the billed amount by sending the corresponding commands from the System to the Controller. Then it sends the commands to the microcontroller section and the required information is sent to the System through Transmitter. If the consumer fails to pay the billed amount in time, the disconnection and reconnection can be done by sending their corresponding commands to the controller

Incoming operations from the server are attended through communication channel by this manager.

3) Automated Reading Manager- This Module Directly reads the Meter reading from meter and send it to the computer .Then we calculate the bill from the reading unit and generate the bill. Then we display it for the particular user . The central server then stores the information in database for analysis and sends the bill to the customer mobile phone and Email. The data collection can be done very quickly and efficiently. Data can be collected after any desired time interval such as hourly, daily, weekly, or monthly basis. As there is no human intervention in the entire process, there is no chance of human error and corruption. In the extremely bad weather conditions like heavy snow, rain, storm, etc the system will not hamper on collecting data as long as networks are stable.

4) Master Communication Manager-After Generating the bill we send it to the particular user. while registration of user we get email-id of the user and from that we send a copy of bill to the particular user on his email-id.the User can then pay the bill online by credit card or debit card. If Bill is paid successfully then this Master Manger update the user details and update the bill status as bill paid. The module in charge of the management of the application protocol with the Readers using the Master device through a RS-232 bus.

Advantages-

1. Reduced meter reading costs.
2. Ability to access difficult-to-read meters.
3. Improved customer service.



4. Reduced percentage of estimated bills.
5. Improved meter reader safety.
6. Implementation of real-time pricing.
7. Reduced read-to-bill time.
8. Distribution automation.
9. Improved fraud detection.

Conclusion-

- The WAMRS presented in this paper has many advance study result in computer technology and communication technology. An economical prototype WAMRS has been developed in wireless communication. This process includes taking meter reading, distribution of bills and sending notice about due dates via sms & emails, cutting and reconnection of flow.
- WAMRS projects with the aim of reducing the cost of meter-reading, improving the collection of data from the

meters, and then providing information to consumers about their energy usage.

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