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Automated Multipurpose Metering System

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Abstract
The aim of the project is to expeditiously scale back the electricity usage, gas usage and water usage within the residential district. The projected system has 2 sections primarily, one is that the domestic meter section whereas the other being the server controlled section. Communication between these 2 sections is completed through wireless network. this technique is able to monitor the energy consumed by the users (KW).Sources which are used will have the corresponding readings which are going to be recorded within the server and also an application is provided for customers at the same time to communicate to the controlling base station. the customer will be able to track the daily usage of all the 3 sources and additionally the quantity of consumption.
Keywords:**arduino uno , water flow meter, gas flow meter, solenoid valve , telegram transmitter**

I. INTRODUCTION

In current day to day life, the electricity billing wants one electricity board employees to go to each home to envision what quantity power has been consumed, then electricity bill are going to be given. just in case a client isn't available at home and has not paid the bill then the approved person from the electricity board will be able disconnect the facility of power supply from the energy board by removing the fuse carrier. By implementing our project there's no necessity for the approved person from the electricity board to go to individual homes instead he will send the monthly electricity bill automatically by the base station through on-line.

The approved employees may cut OFF and ON the electricity,water and gas supply to the individual homes by the assistance of base station. so as to expeditiously cut back the quantity of the electricity usage within the residential district, the demand response (DR) of the consumers is of at the most importance.There are scenarios where the consumer may depart of the house and has forgotten to turn OFF all fans, lights and other electrical equipment's. During this point if the supply of power comes back then all the electrical equipment's activates and this can lead to the damage of the electrical equipment's' and also the power wastage.

By our projected system to be are able to cut back power wastage, at at the particular time the patron are able to send the suitable message to trip off those power, we tend to be able to put off all equipment's and thereby cut back the power supply consumption.Using this project, farmers are able to trip OFF & trip ON his pump set used in agriculture and together get the the current data regarding the distant places in his set of land he owns. By certain modifications, it'll be used as home appliances controller.

The Data transmission between Energy, Water and Gas meter can be communicated to the licensed board through IOT. Today the Internet is one in every important aspect of our everyday lives. The Internet serves countless functions such as education , finance, business , industry, entertainment , social networking, shopping, e-commerce and so on. The new mega trend of the web is the Internet of Things (IOT). Visualizing a world where numerous objects can feel.

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Be that as it should, the IOT will not provide any position among all regions other prominent guarantees than in the area of health knowledge. As an aphorism goes, "Health is wealth," forming the use of innovation for higher welfare is exceptionally crucial. It is therefore required to have a degree IOT system that offers a safe health awareness test.

II. LITERATURE SURVEY

Smart energy metering and power theft control using Arduino and GSM was published by the author KamalSandeep.K in the year 2017 [3]. Theft of energy is a very common problem in countries such as INDIA, where energy users are steadily increasing as the population increases

This paper follows a brand new technique based on the Atmega328p microcontroller to track and regulate the energy meter from power theft, and to solve it by remotely disconnecting and reconnecting a different customer service.A text notification will be sent to the customers phone.

The approach applied results in the solution for non-technical losses, problems in billing and issues in voltage fluctuations.

Design and Implementation of Remote Meter Reading System. It was published by the author Zihan Zheng in the year 2018 [4].The paper proposes a Bluetooth-based, remote power meter reading system.It introduces the system's overall structure and work flow, and elaborates on the system's hardware and software design of the various components.

This system is not only used in the electricity sector but also provides a technical solution for the reading of water meters, the reading of gas meters, smart home .

Design and Implementation of Smart Billing and Automated Meter Reading System for Utility Gas. It was published by the author Muhammed Faheem Khan in the year 2017 [5].Billing automation systems for public utilities (e.g. electricity, gas and water) have been widely studied and implemented in developed countries across the world. For low gas consumption (domestic consumers), a prepaid meter has been designed. Which needs a prepaid card to keep the gas supply.

As it is a prepaid service system the supply is not continuous. In our project we have an application that is connected to the meter to show the bill…and it will stop the supply after a certain number of days if the payment is not done.

Automation of electricity billing process. It was published by Manisha V Shinde in the year 2017 [6]. AMR (Automatic Meter Reading) concept is developed in which automatic collection of readings, transmission and sending bill to customer is done easily.

AMR is used efficiently as camera fixed in front of energy meter of each house will capture the image of meter when it gets command to capture and send this image to energy provider office wirelessly where it undergoes pre processing and recognition of digits which are further used for generation of bill.

As it is sending the picture to the energy provider office wirelessly it will have some interruptions which creates a problem in the meter readings and thus the billing process

Our project direct shows the bill in any electronic device….no need of snapshot and thus no interruptions

Separate meter for all the equipment so as to calculate the units power, amount of water and therefore the quantity of gas consumed. Bill are going to be issued by the respective person of the respective department each month. If we have a tendency to not to pay the bill then the power supply are discontinue by removing the fuse carrier by the approved person .Similarly, the gas and therefore the water system will be cut by the licensed person who is accountable.

It relies entirely on meter reader, The manual meter reads will not prevent human error, There will be no cross-checking or re-checking of the energy utilized by human readers, Unceasingly high probability of theft and violence to exploit it greatly in all cases, Ability to adjust the reading once energy meter images are taken using computer code tool.

III. PROPOSED SYSTEM

An Electricity, Water and meter works by directly communicating with the respective provider with the wireless data protocol, so the company can always read the appropriate meter and there is no need to read a meter with any human intervention. Energy, water and

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gas meters can operate in a wide variety of ways to submit information, including wireless mobile technologysuch as:

The energy , water and meter monitor displays the quantity and price of energy consumed per minute. The patron will monitor his consumption with the aid of this and make building expense economically.

Power, water and gas meters will provide us with reliable, daily customer data. Thus user bills will be accurate and the need to submit meter readings will be terminated.

Energy, Water and Gas meters are expected to provide economic, social and environmental benefits. This project proposes a innovative reasonable meter which is able to digitally send meter readings to the patron, through that the electricity bills, water and gas bills are generated and sent to the individual customers. this may guarantee additional precise bills.

Meters conjointly associate with monitors, through that the usage can be better understood. sending details to consumer or utility company through text messages using Wi-Fi network by the Arduino micro controller is a distinct feature of this project.

IV. DESIGN AND IMPLEMENTATION

The projected system introduces an innovative meter reading technique electronically and forwarding to headquarters for advance technology. This helps to reduce the manual errors occurring on this meter reading system at intervals.

Meter reading system is progressing to be customary for multiple utilities such as electricity, water, gasoline (LPG, CNG) etc.., Let 's think of the associated example of Electricity; here we have a tendency to connect the Energy Meter between the main supply and the load, whereby the microcontroller progresses in order to be able to live the energy units consumed by the customer.

As the house's various appliances consume electricity, the energy meter incessantly reads the reading and this consumed load is typically seen on meter.We will see that the led on meter incessantly blinks that counts the meter readingsupported.

In our project, we tend to build a system in which Arduino Uno acts as the main controller, which monitors the energy meter incessantly.

Arduino can measure unit consumption as per the blinking of led on an energy meter. The measured reading will be displayed simultaneously within the application, with the price calculation.

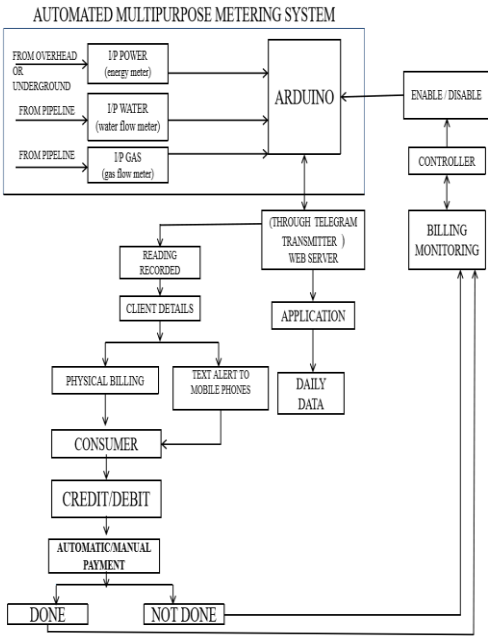

Figure 1. The Fucntional Block Diagram

The threshold value is sent to the website using Wi-Fi, as per the demand of the user. Once the buyers read area unit is close to the set threshold price, a notification price will be sent to the patron. This notification of the threshold value can increase consumer awareness of energy.

The microcontroller measures how much energy is consumed. Then the calculated values are transmitted to the main STATION in a flash via Wi-Fi, and therefore the necessary updates are carried out within the consumer's data BASE.

V. SUMMARY DISCUSSION

This proposed system has some advantages viz., Electric meters are remotely scanned, Increased accuracy by automating the meter reading, Customers will track their usage and therefore the each penny he had to pay money for it, E-billing promotes go green. In addition the User friendly application for the convenience of the payment through an app, Theft of electricity will be monitored through regular check of customer usage, No man power

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is needed for the provision of the bill and for the payment of the bill (BESCOM).

This system provides an automated process. Also it sends a message to the user and the controlling authority. It is more reliable system and a needy one in the artificial intelligence world.

VI. CONCLUSION

The automated system designed is a good automated process, rather than manual operation. Therefore, meter accuracy is magnified and meter maintenance expenses are reduced jointly. This projected automated system consists of 2 sections. One at the Electricity Board which includes an office section containing a computer with a back end connected to a database.The other portion is that the customer home portion that is present at the house this section is used to read the amount of power used by the customer and then the data is sent to the computer system present at the Electricity Authority board. This approved electricity board section measures the bill and sends the bill quantity to the customer via the IOT.It also allows the user to update on the power details used in his house. The network planned uses the existing cable. Because it seems to be the most economical and adaptable system compared to other methodologies, this technique is extremely advantageous as it is easy to obtain precise consumption data. Clear and precise billing is completed, without any error.

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