IOT BASED ELECTRIC METER TAMPERING DETECTOR

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ABSTRACT

IoT based smart and multifunctional energy meter reading of automatic meter using ATmegha kit. It has the ability to connect to the public database maintained by the energy supplier through computing and energy meter tamper detection. It can prevent theft detection for unregistered users and save losses as a result. A unique feature of this meter is its Internet of Things based functionality. Metmegha. In this case, the system will use the wireless system communication protocol. Wireless is used because the application requires high data rate, low power consumption and low cost. This article shows the ATmegha remote meter reading system. This is to solve the shortcomings of traditional ATmega Meter Reading technology by combining the features of wireless technology with Microcontroller ATMega16. The hardware design was implemented and then the usage of the ATmegha meter was analyzed. There are many opportunities for errors, processing delays, meter confusion, and misuse of electricity and other resources. More than one worker is needed; One group of workers must record the readings, and others must reduce electricity if payment is not made on time.

Keywords: AT Metmegha, Microcontroller, Internet Of Things. Etc.

I.   INTRODUCTION

In the Internet of Things, most of the living and non-living things around us will be available on the Internet in one way or another. Thanks to the popularity of devices powered by technological innovations such as Wireless Bluetooth, Radio Frequency Identification, Wireless Fidelity and embedded sensors, IoT has emerged in its own category and is truly on its way to revolutionizing the Internet. -net looks good on the internet. There are currently billion connected devices, and this number is expected to reach 50 billion by 2020. The world today faces a challenging environment. The energy problem is the most important problem facing our society. Systems for monitoring and controlling energy consumption are one of the solutions to this problem. One of the ways to solve current energy problems is to reduce electricity consumption at home. Consumers are rapidly increasing and are demanding electric vehicles that offer a wide range of products. Consumers should be facilitated by providing the best solution. Embedded systems and real-time operating systems (RTOS) are two of several technologies that will play an important role in enabling these concepts [2]. A large number of people already rely on operating systems for real-time applications; these 'eyes in the sky' will now visibly influence daily events. The onboard system is pre-programmed without connectivity and functions as needed. But in an instruction-oriented operating system. The system is, in principle, a system without a system. Embedded systems are the unsung heroes of much of the technology we use today: the video games we play, the CD player or washing machine we use. Without an embedded system, we couldn't even get online using a modem. Nearly every car coming off the grid these days has the using technology embedded in some way; Most systems in vehicles are rugged in nature, as most systems are operated by a single person. There are no driver accidents or 'system congestion' in the system. Their compact profile makes them easy to fit under narrow vehicles. These systems can be used to implement everything from adjusting the suspension to road conditions and oil octane to anti-lock brakes (ABS) and safety systems. An embedded system is designed to perform a specific task rather than a general-purpose multitasking computer. Some also have specific uptimes that must be met for reasons such as security and availability; others may have little or no functionality, allowing for simpler hardware to keep costs low.

II. LITERATURE SURVEY

Research 2015 Project helps rapidly replace electronic meters that are read manually once a month with smart meters that send electricity to buildings every few minutes. In 2011, more than 37 million smart meters were installed in approximately 493 states in the United States. Unfortunately, smart meters also directly reveal private and potentially valuable information about building occupants' activities. To obtain this information, third-party companies now use a cloud-based 'database' to analyze large amounts of smart meter data. While the goal is ostensibly to provide energy efficiency recommendations to customers, companies are using the data to derive profitable insights. For example, identifying energy signatures (a set of energy changes unique to an appliance) for a particular brand of appliances can help manufacturers direct marketing efforts by identifying homes with common electrical appliances and Maytag appliances. Many companies offer access to smart meter data to third parties. For example, a recent report demonstrates the effectiveness of asking customers to agree to share their information with third parties before allowing them to use the Internet [9]. This privacy breach sparked a small but growing backlash against energy meters Art. Rahman is innocent; Noor-E-Jannat; Mohd. Ohidul Islam; Md Serazus Salakin "ATmegha and GSM based

incorporate with embedded controller and GSM modem to transmit the data like consumed energy in kWh, generated bill, security services (line Cut/On) over GSM mobile network such as data can be then fed and integrated into existing energy management systems located at power companies or organizations to provide the services among the customers without man-power. Our implemented project is able to provide all required services remotely for metering and billing with high fidelity.

Hung-Cheng C HEN, Long-Yi CHANG National Chin-Yi University of Technology "Design and Implementation of a ZigBee-Based Wireless Automatic Meter Reading System".

ZigBee is a new global standard for wireless communications with the characteristics of low-cost, low power consumption, and low data rate. It has a good market in wireless meter reading. The design and implementation of a ZigBee- based wireless automatic meter reading system are proposed in this paper. The experimental results show that the design can meet the basic needs of automatic meter "Power measurements for measurement and charging" IEEE 2015 978-1-4673-6676-2115 Every management system strives to be automatic, simple and remotely controlled. This work shows the machine of the power of the electric meter using and using the payment system. The integration of ATmegha and GSM Short Message Service (SMS) provides a meter reading system with automatic pre-programmed functions. First, we simulated the project in PROTEUS 8.0 and successfully implemented it on the circuit board in the laboratory. The proposed energy meters system can be integrated into the with a GSM module that transmits data such as energy consumption in kWh, issued bill, security services (line Cut/Turn on) as data that can be entered later via GSM mobile. It is recorded in the standard energy management system of energy companies or organizations for the purpose of providing services to non-human energy customers. Our integrated project can faithfully provide all necessary services for measurement and payment remotely Hung- Cheng CHEN, Long-Yi CHINA Chin-Yi University of Technology "Design and Implementation of ZigBee Based Wireless Automatic Meter Reading System" ZigBee is the world's new standard in low-cost, low-power, low-bandwidth wireless communications. It has a good source for wireless meter reading. This article presents the design and implementation of a ZigBee-based machine learning system. Research results show that the design can meet the basic needs of automatic and flexible meter reading. Capable of operating as a wireless operating system platform, the offers a new hardware design for ZigBee storage. With the rapid development of metering and measurement technology, automatic data recording in the meter reading device has become the goal of people whose work, life and home are becoming increasingly smart. Meanwhile, the development of new technologies to solve the problems encountered in practical applications related to difficult meter reading, which do not require reliable and real-time protection, are useful activities and beliefs; Enable the use of users and raise the status level and management level. The current line reading system has many risks. Cables are bulky and hinder system flexibility and maintainability. Long-term installation indoors and outdoors easily leads to wear, causing the risk of short circuits and breakage. For these reasons, the design of remote meter reading systems that have long-term reliability, are easy to install and maintain, and not only automatically read data but also monitor system performance has become the most unsolved problem in the industry. With the development of wireless

communication technology in recent years, demand has emerged for devices with low-cost Internet technology called ZigBee. It is a two-way communication technology with short distance, high complexity, low cost, low power consumption, low data rate, high network capacity, low latency, security and reliability. Potential applications for include industrial control, electronics, automotive use, agricultural use and medical device control. The foundation of the technology was laid by the IEEE 802.15.4 Working Group, and the ZigBee Alliance was established in 2002 for high-level applications, interoperability testing and marketing. To date, ZigBee Alliance has reached more than 150 members from world-famous companies, including IBM, Ember, Mitsubishi, Motorola and Philips. Several semiconductor companies are targeting the ZigBee market. Since the recent launch of the standard, the chip-compatible protocol has proven to be a multi-chip, single-chip solution. ZigBee can be expected to have full applications in the field of automation. The most important measurement methods at home and abroad; manual meter reading, IC Prepaid Card, wired and wireless meter reading systems. Manual meter reading has been done for decades, but with the use of a meter in households, this reading method has many advantages in terms of entering the household, payment efficiency, etc. Many disadvantages emerged such as. ZEB Designing and implementing business and industrial systems based on wireless communication has always been an important area of interest for many researchers and developers. This paper presents the implementation of a wireless computer reading system (WAMRS) covering the widely used GSM network. In many countries, GSM network is popular due to its wide coverage, cost-effectiveness and increasingly competitive market. Using GSM as a device in WAMRS provides cost-effective, wireless, always-on, two-way communication between utilities and WAMRS. WAMRS transmits data about grid usage, power quality and alarms from the grid, as well as tamper detection on the server. In this document, we propose how to use a communication system for automatic distribution of information to facilitate billing via SMS and email to the end server and client. The proliferation of wireless communications requires and calls for new methods for next-generation automatic meter reading, aimed at helping automatically collect meter readings and possibly send commands to the meter. Automation ranges from remote connection of the meter to transmission of meter readings to the electricity distribution company via the GSM network. With the development of the country's economy and the improvement of the country's energy supply, electricity consumption continues to increase due to improper electricity management and the use of traditional energy metering systems. There have been many developments in measurement equipment in recent years, and it is expected that they will become increasingly efficient and able to provide more services. In the past, and even today in a few countries, the standards were for electronic devices with low accuracy and incomplete structure. Detection of theft was also a problem. These meters are limited to meters and provide an estimate of energy consumption on site. Recent developments in this direction look promising.

Application of accurate, complete and error-free energy measurement technology, etc. by. The implementation of WAMRS offers a number of important features when compared to the average meter reading and human effort. Some of these features are mentioned below, 1. High speed. 2. Improve load conditions. 3. Invoice to be paid. 4. Real-time energy costs. 5. Cargo management. 6. Warning. 7. Remote on/off. 8. Identifying fraud. 9. Mixing of water and gas. WAMRS provides two-way communication between the power company and the load by transmitting multiple power measurement and control signals to achieve the purpose of load management and power control. Using WAMRS in distribution automation can provide many capabilities such as accurate meter reading, distribution, energy monitoring and control, load management and time of use. With the rapid development of mobile phone communications, future demand service will focus on forwarding service. Pooja D Talwar, Prof. SB Kulkarni "IOT BASED ENERGY METER READING" International Journal of Current Trends in Engineering and Research (IJRTER) Volume 02, Issue 06; June - 2016 [ISSN: 2455-1457] The Internet of Things allows everything to be monitored and controlled remotely from existing infrastructure, providing the opportunity to fully connect the world to computer-based systems, resulting in increased performance, integrity and economic A growing generation needs devices that use wireless technology, including Bluetooth, radio frequency identification, built-in sensors and more. In this way, IoT technology has grown since 1 and is now widely used. Electricity has an important place in our lives. With the rapid increase in the number of consumers, dealing with electricity has become difficult. It is not possible to live without electricity, and it is also important to save on electricity loss. As production increases, consumer demand also increases, so there is a need for development accordingly. That's why we developed a system with advanced technology, namely IoT.

Electricity also has some problems, such as electricity theft. Electricity theft is a serious crime that affects our country's economy. Transmission, generation and distribution of electricity,including electrical losses. We must follow electricity consumption and losses so that we can use the energy produced efficiently to prevent losses. Heat meters are part of electricity theft and are illegal crimes that we can reduce. Billing is the th transaction. Usually the operator has gone to the consumer's home and it will take a long time to issue the invoice. To solve these problems, we developed a system based on IoT meter reading. IOT based energy meter reading consists of three parts: Controller, Anti-Theft and WIFI part. The control unit plays an important role in the system. Where all information can be sent to the other side of the system through the controller and the information stored there can also be stored. WIFI module realizes IOT functions based on ATmegha controller. The energy meter connected to the theft detection unit automatically decides to turn off the electricity by sending information to the company in case of malfunction. Darshan Iyer N, Dr. K A Radhakrishna Rao "IoT based electricity meter reading, theft detection and prevention and energy consumption using PLC modem" DOI: 10.15662/ijareeie.2015. 0407113 Customer must pay electricity consumption fee for the program. If unable to pay, electricity can be cut off independently of the remote server. The user can monitor the energy consumption of the units from the location by specifying the IP address. The theft detection unit connected to the meter will notify the business side when meter damage occurs in the meter and send the theft detection information via modem, and the detected theft will be displayed in the window on the business side. The Wi-Fi unit enables IoT functionality by sending energy meter data to a page accessible via an IP address. The interface consists of PIC18F46k22 microcontroller, MAX232, LCD display, anti-theft unit, Triac switching circuit, DB18B20 sensor, PIR sensor, PLC modem and ESP8266 Wi-Fi module. The Wi-Fi unit enables IoT functionality by sending energy meter data to a page accessible via an IP address.

III. MOTIVATION

The device reads the meter remotely and sends this information to the system computer through communication media such as (RF communication module) or special process cables. The device can detect outages, connect and suspend services remotely, detect tampering, and more. It has advantages such as higher costs, lower labor and material costs, greater accuracy and lower costs. Some customer benefits include 's best customer service, customer choice, and fast response times. If staying at home is controlled by technologically savvy people, the consumer side will be hampered. Thus, this problem allows us to avoid this problem with the system we propose. It is very difficult for energy companies to record how much electricity consumers consume per hour. This inspires us to create a single integrated database that can store the data of users using electricity every hour and to analyze how to prevent the detection of houses in the scope of this problem. With the development of advanced technology, research on wireless applications and remote control has become popular today. An electric meter, electrical meter or energy meter is a device that measures the amount of electrical energy used by a residential,commercial or electrical utility.

IV. RESEARCH ANAYLSIS

With the increase in population, homes, workplaces and industry, electricity or energy consumption is increasing more than the number of users due to technology, equipment and systems that are dependent on electricity. To ensure fair billing, it is now imperative that utilities develop efficient, non-invasive, environmentally friendly measurement methods. The benefits outweigh the energy costs. and will form the basis for electricity supply and demand forecasts that will lead to efficient energy distribution, electricity generation and waste reduction. The Smart Metering System is designed to make charging systems more convenient and efficient. The standard measuring system is done manually. An employee of the electric company will come, take a reading and enter the card. There are many opportunities for manual errors, processing delays, meter confusion, and misuse of electricity and other resources. A large number of workers are needed, one group of workers must record measurements and the other group will have to reduce electricity if payments are not paid on time and our service is very bad. Reading by hand may cause errors in calculations. Sometimes the images taken by the meter reader are not in the correct order, which can cause the bill to be calculated incorrectly. This problem can be prevented with the project we propose. If the bill is not paid by the user within the stipulated time, it takes some time for the MSEB employee to go to the house in question and freeze the meter until the bill is not paid by the consumer . This is a time-consuming process.

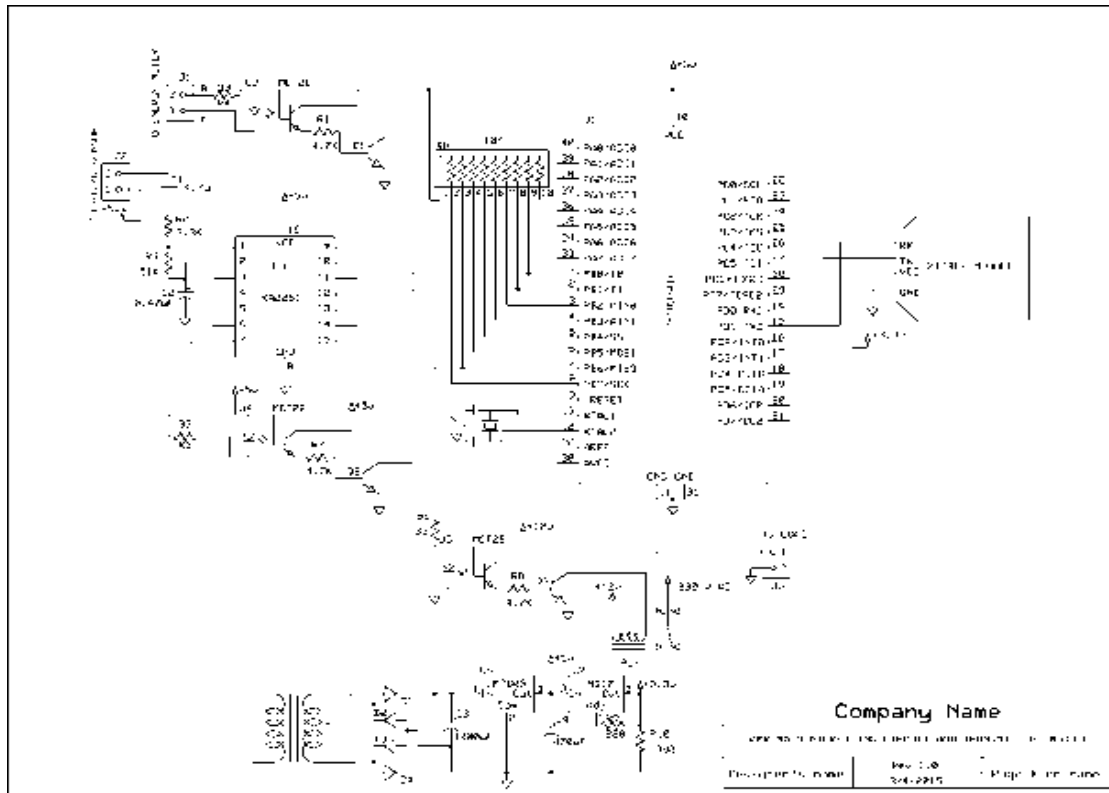These are the ones that can be defeated by the system we propose.

Fig 1. I nterfacing circuit and transmitter module

We are going to achieve following objectives which are further divided into two sections. Interconnection lines and transmission models We will achieve the following objectives, which are divided into two parts. Benefits of Electricity Company:- Application of artificial intelligence to replace manual work. Provide real-time information from the network to increase maintenance and investment. Providing specific prices and invoice dates. To facilitate project research. Determination of meter readings. To ensure accurate measurement of pollution losses. Implementation of network efficiency and effectiveness. Ensuring good requirements and good management. Add more wisdom to business planning. To establish a good corporate reputation. Preventing theft detection by unregistered users. Preventing criminals from using technology to find out who lives in a consumer's home. Facilitate monitoring of users' electricity consumption through cloud computing. customer benefits:- Provide correct information before use. Providing clear and complete invoices. Ensure data interruption and recovery rates. Prevent theft by detecting users at home.

V.   CONCLUSION

This page is mainly focused on IoT network. The first step is to convert the electromagnetic energy meter into a digital meter. We do automatic reading and also connect and disconnect the meter using a wireless module. Then the meter reading came quickly. It is available to customers. If the meter is connected to and disconnected before the stipulated date, people will use the information according to their needs and will have the freedom to check and reserve the bill. Thus, we are closely monitored while tightening the damaged stamp and reading the meter notes on the website with the IOT concept. Overall, the new thing we are working on in our project is the combination of the controller with the ATmegha controller and the IoT model. meter reading is a unique solution to problems in manual systems. Meter reading is the only reliable system. Meter reading using a special system is a new concept. There are many possibilities like manual errors, delays in operations, confusion of meters, misuse of electricity and other resources, but we can easily overcome them with the help of meter reading. The Standard system is very suitable for achieving force transfer. Prepaid services allow us to use or save electricity. benefits include higher income

VI.   REFERENCES

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