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Automatic Tariff Controller

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Abstract: ***The growth in the demand for electricity in Libya during the last decade witnessed a dramatic growth in the national's annual residential development has played a major role in boosting the demand for electric power. The domestic sector in Libya already accounts for approximately 39 percent of electricity demand. To meet the projected demand for electrical power to cope with, the development plans, increases in the population and the rising in the living standards, government will have to accomplish new power generating units. Comparing with the high budget of constructing new generating power units, load management system it would be attractive resource that should be seriously considered as an important part of national energy program, where demand growth rate exceeds the supply since it is playing an increasing role around the world as a valuable and cost effective energy resource. Hence, was light projecting on power load management program, for its benefit in reducing the energy demand at peak timeown***

Keywords: Include at least 5 keywords or phrases

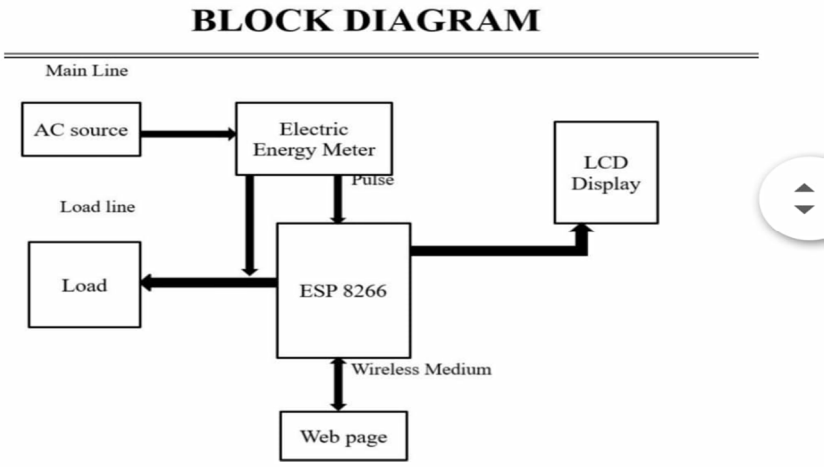
I. INTRODUCTION

Electricity is an important invention without which life on Earth is impossible. So obviously there is a need for measuring the consumed electricity. It is accomplished by the wattmeter, but a person from MSEB has to visit each house for measuring the power consumption and for calculating the bill amount.

So it requires much of manual work and consumes time. In order to avoid all these drawbacks we have intended to construct an IoT based Smart Energy Tarrif and Load Management. So the proposed Smart Energy Tarrif and Load Management measures the amount of power consumed and uploads it to cloud, from which the concerned person can view the reading. The power reading is sent to cloud using ESP8266, a Wi-Fi module. The power reading from Analog wattmeter is read using the optocoupler and transmitted digitally with the ESP8266. So it automates the process of measuring the power consumption at homes using IoT and thereby enabling remote access and digitalization.

II. LITERATURE REVIEW

For Communication to the server many options are there as wireless or wired such as cable networks, and the different WIFI modules, which is known researchers. Different Countries Trying to implement this idea. From the different papers we have different researcher work regarding our new concept.In paper [1] (2014) Pradip Kulkarni and Manisha Shinde has publish a paper on automation of electricity billing process in that new architecture that the electricity board has manual process and to remove that process they introduced a module in which data is gather from the energy, water and devices and transfer to the centralized station from the billing purpose.



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The data is collected using single camera, with means the camera is placed in front of the meter of the everyone‟s house and the camera will capture image of meter and server will directly fetch that data from the each house, so that human interaction is totally avoided. ARM7- NODE MCU is used as the interface between the devices. After that the image will reach to server and undergoes the different processing through Mat lab, so that the every month reading is stored in the database of the electricity board.

So the technology used in this paper was image segmentation and the AMR, zigbee, so that advantages of this technology was this technology is used properly, and the disadvantages for this architecture was that it is costly. In paper[2](2015) R.G.Yadawad has publish on intelligent electricity billing and the maintenance system in which new way of billing process there was many errors in the different models which were introduced earlier so in this paper the model used was through mobile agents.

This Paper tells us about the how the new architecture is more feasible using mobile agents. The proposed model of this model consists of the server, digital meter, and smartcard, software agents, PLCC and directly sync with the bank account. The server is used as a central entity which supports overall activities of the system. The main works of the server is to maintain the central database of the electric board with includes the user information and their smart cards information. Bank account is directly sync in the database to the user account.

Digital meter is installed to the users‟ house as it will work as an embedded system that Is consist of the processor, which will work such as user functionalities, communication with the servers and the power supply. Smart cards are provided by the electric board and the smart card contains 1.unique Identification number and Bank Information.

Software agents they have capabilities of the creating better client-server architecture, here the mobile agents gives that information but they are not good for the data transfer.

FTP is used for the data transfer over the internet. Power line carrier communication does the work of transmit the data over the power lines; it is a deepest capillarity in the world since the power lines introduced. It operates the radio frequencies generally below 600 KHz transmit over the lines. Sync with the bank account the server maintains the record of the billing process so that bill amounts are automatically deducted from the user account.

Or in another way user may also pay by cash or the mobile phones. The technology used in this model is IOT, and the advantage by using this architecture is the mobile networks and the fast way for processing of the bill, and as mobile networks are using it requires more mobile towers to communicate which will also increase the cost this is disadvantage of the this model. In paper [3] (2014) Nidhi Gaur has publish on Prepaid electricity Billing Machine using FPGA, this paper shows the advancement of the technology.

This paper includes PEBM Design implementation with description, Flow chat and FSM. How the results are on the Xilinx Spartan6 FPGA Device is explained, it also explained the design specification over Power Supply, total current, logic utilization and the memory and timing information.

III.PROPOSED SYSTEM

In the proposed method, the consumer can manage their energy consumption by knowing their energy usage time to time. This method not only provides two way communications between utility and consumer but also provides other functions that are if the consumer fails to pay the electricity bill the energy supply would be cut down from the utility side and once the bill is paid the energy supply is reconnected. Another huge advantage of this system is that it notifies the consumer & utility at the event of the meter tampering. By this information the consumer & utility can control the tampering are reduce energy crises.

Since IoT is cost effective compared to SMS, monitoring of Smart Energy Tarrif and Load Managements at lower cost is made possible.

Daily consumption reports are generated which can be monitored through web portal. The current system of electrical energy billing is erroneous and also time consuming. Errors introduced at every stage are due to electro -mechanical meters, human errors while noting down the meter reading. This Project reduces the deployment of manpower for taking meter readings. It has many advantages from both suppliers as well as consumer‟s point.

Smart Meter Reading. A device which remotely obtain meter readings and transmits this data to the system‟s computer via communication media such as IOT(Internet communication module) This devices can detect outages, remotely connect and disconnect services, detects tampering as well as other uses. Economic benefits include increased cash flow, lower Labour and equipment cost, increased accuracy and lower costs. Some customer satisfaction benefits include improved service quality, more customer choices and faster response time

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IV.HOW DOES IT WORK?

Here we have interfaced electricity Smart Energy Tarrif and Load Management with ESP8266 using the pulse LED (Calibration or Cal) of electricity Smart Energy Tarrif and Load Management. The pulse LED can connect to ESP8266 through an Optocoupler IC. When we power up the system microcontroller reads the how many times pulse LED will blink in a minute using following equation.

*A. Pulse= (Pulse rate*watt*time)/ (1000*3600)*

Then we need to calculate Power factor of a single pulse, means how much electricity will be consumed in one pulse:

*B. Power Factor=watt/(hour*pulse)*

Using this power factor, we can calculate the no of units consumed by devices and then generate bill. Generated bill can be send to the customer server account and to the electricity board through wifi module. These data can also send to the LCD display connected to the ESP8266.

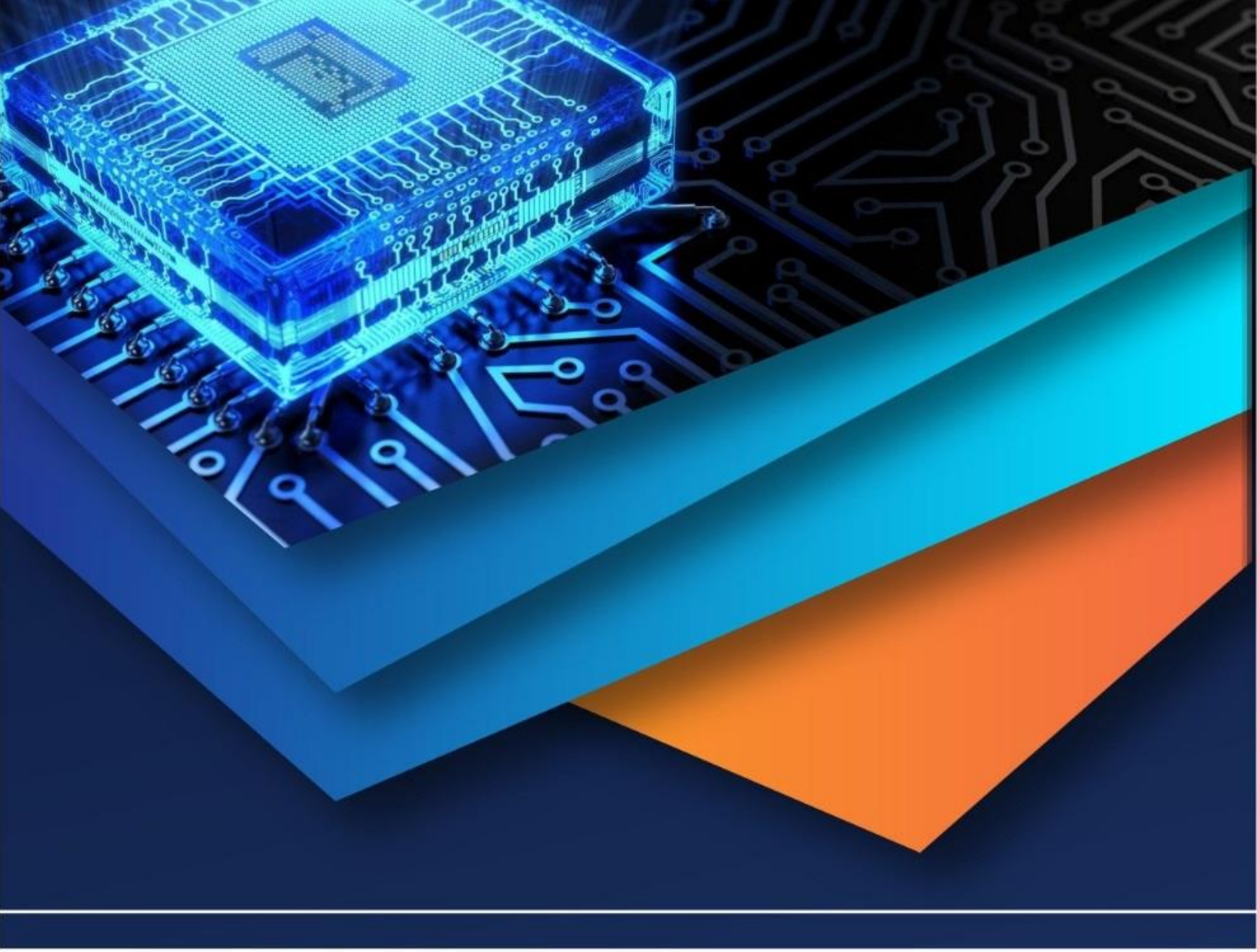
V. CONCLUSIONS

From this project we understand how to control the tarrif factory of industry during peak load demand

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