IoT Based Energy System in A Facts of Principle Intrusion on Power Administration

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Abstract- The Stimulation to accomplish energy usage at a residential direct Asian country is influenced by political economy, status, and technical reasons. Economically, it offers a discount of state subsidies and electricity bills. The ecological condition facet permits the reduction of CO2 level. we are able to limit the availability to the house by pre-default setting the worth to be consumed so energy will be managed by limiting. the facility administration system comprises of Alphanumeric Power cadences are put in a piece shopper unit and an Electricity e-Billing scheme at the energy supplier aspect. Wireless sensing element network sends its power usage reading exploitation data back to the energy supplier wirelessly. On the facility supplier aspect, they'll amendment the devices' priority once power is distributed within the low vary. Index Terms- Electricity e-billing, Wireless sensing element network, pre-default setting, Digital Power meters.

1. Introduction
Anthropological machinist promoting is liable to interpreting miscalculation as sometimes the house electrical supremacy meter is placed in an advert which is not effortlessly reachable. The notion of zestful mission of pricemates to intrudes is discoursed, which diminishes the interval of interruption for a low primacy job, which becomes a high primacy job. Carving for intrude skills is also discoursed, which can be used to develop the staging.

The uppermost precedence chore is ladled out for supplementary number of times and with a lesser epoch. Hence it is not prerequisite time lag for the tab time of former hitherto high primacy intrudes. If power is fewer in the grid, automatically, it will accomplish energy. Our projected system with low power cohort automatically goes to power management. All the devices controlled depend upon the
priority-based and timing-based control of the apparatus with low power cohort. In the Prevailing System, meter reading was taken physically. Errors occurred due to less concentration. Meter reading is not precise, Enormous Manpower needed. Delayed work due to external conditions Power cut manually due to lack of payment. In the anticipated system, the Measure reading is taken robotically using GSM technology.

Power expurgated achieved from EB administrative centre concluded wireless work happen at any time and peripheral conditions less manpower, high truthful measure interpretation, customer service and well power super vision. PIR sensor is used to find the person entered into the room.

2. Methodology
3. Design of Experiment

**Figure 1.** For Voltage and Current Calculation from The Load.

**Figure 2.** For Fault Occurrences in The Street

**Figure 3.** Block Diagram of the Project
CT sensor measures current. PT sensor measures voltage. Both CT and PT are connected to the controller. The value of CT and PT are sensed and displayed in LCD. GSM is interfaced with the regulator when it crosses the ultimate voltage, the GSM building block sends squat communication facility to the enumerated itinerant digits.

PIR sensor is interfaced with the microcontroller, and it is intimated through the GSM. Firstly, a threshold value is set for CT and PT. If the current value or the voltage value exceeds the threshold value, usually the fuse will be blown in the existing system. Whereas in the proposed method, directly, the load will get switched off. The present value of the current and voltage will be detected, and the value sensed will be sent to the registered mobile number. The distribution transformers present in the fault detection system plays a vital role in this energy management system.

If the voltage sent to these transformers is lesser or greater than the fixed threshold value, it will lead to tripping of the circuit, the voltage value and the distance between the transformers will be sensed, and the detected value will be sent to the registered mobile number. This value is also uploaded to the webpage using HTML scripting language.

Figure 4. Main Circuit Diagram of the Project
4. Devices

4.1 Transformer:
In the project, it uses a step-down transformer of core type. The power supply of the transformer is a 230V 50Hz AC supply. The rating of the device is 230/12 V 1A.

4.2 Bridge Rectifier:
Other devices require DC supply in the project. For conversion of AC to DC supply, we use bridge rectifiers. For filtering the output of the rectifier, we use a 1000uf capacitor.

4.3 Voltage Regulator:
For the power supply of 5V, we use an LM7805 voltage regulator for regulating the supply separately for 5v power supply devices.

4.4 Trim pot (pre-set potentiometer of 10k ohm):
A visual form of the real-time problem needs to show the frequent change in the voltage and current for the load. So, we use pre-set potentiometer of 10k ohm for variable change in voltage and current, with power supply of both 5V and 12V DC.

4.5 Current Sensor:
With the supply power of 5V DC, we use ACS712 current sensor to sense the change in the present value which flows into the load.

4.6 Voltage Sensor:
With the supply power of 5V DC, we use voltage sensor whose $V_{cc} < 25V$, to sense the change in the present value which is across the load.

4.7 Relay:

Figure 5. Power Supply Circuit Diagram of the Project
With the supply power of 12V DC, HL JQC-3FC, we use this relay which control the load by switching off it when the load receives a change in value of voltage and current in reference with the threshold value.

4.8 Arduino UNO Board:
The main program of this project is encrypted into this board for the progress of the output.

4.9 Ethernet Board:
Using LAN connection, the calculated value is updated in the webpage in a particular IP address for the provider side.

4.10 GSM Module:
With a direct connection from the main for the power supply of the GSM Module which is used in our project, through which the calculated value is send to registered mobile number.

4.11 16*2 LCD Display:
Liquid Crystal Display of 16*2 is used in the project for the displaying the value sensed and gets the value from the interfacing it with Arduino UNO.

4.12 Jumper wire:
Female Pin and Male Pin Jumper wire is used in this to communicate with all other devices from Arduino UNO.

5. OUTPUT

**Figure 6.** Amount produced Voltage

**Figure 7.** Amount produced Current
Figure 8. Amount produced Voltage of Street1

Figure 9. Yield Voltage of Street2

Figure 10. Yield Voltage of Street3

Figure 11. Output Graph for Current sensor
Figure.12. Output Graph of Voltage Sensor

Figure.11. Update in Webpage to Provider Side

Consumer.

6. CONCLUSION

The voltage value and the current value at the present situation is detected. The distance between the distribution transformers during fault occurrence is sensed and uploaded to the website, then to the registered mobile number.
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