INTELLIGENT POWER DISTIBUTION SYSTEM USING IOT TECHNOLOGY

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Abstract- Power distribution systems should meet demands such as high reliability, efficiency, and penetration of renewable energy generators (REGs)in a smart grid. In general, power distribution systems are radial in nature. One-way power flow is the advantage of a radial system. However, the introduction of REGs causes bidirectional power flow. Furthermore, there are limits improvements reliability and efficiency in a radial system. Therefore, the upgrading of primary feeders from a radial to a loop configuration has been considered in the Korea Smart Distribution Project. An advanced power distribution system (APDS), in which primary feeders operate in a loop configuration. Enormous number of accidents occurs all over the world in substation and power grids. In such cases, the whole accident may go unnoticed and by the time it is discovered, it may have been too late to control the fire and voltage sorts. Even though in power distribution system there is no system to intimate the accident causes due to the high temperature, improper oil maintenance, high voltage and low voltage problems. Hence an automatic system is required to handle such situations. In this proposed work, we are implementing the automation in smart grid that is in loop configuration for monitoring and controlling the parameters of the transformers and relays using an android application in smart phones.
Keywords—powercontroller,advanced powerdistributionsystem,distributionautomation system, Short message service
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I.INTRODUCTION

At this time, the traditional electrical community device is arguably old-fashioned to be capable to pursue the speedy boom of demand for electrical electricity availability we required smart monitoring and distribution system. The Internet of Things (IoT) is a network of connected smart devices enabling to transfer data. The 'thing' in IoT may want to be a individual with a coronary heart display or an car with built-in sensors i.e. objects that have been assigned an IP tackle and have the capability to accumulate and switch information over a community except guide help or intervention. The embedded technological know-how in the objects helps them to have interaction with inner states or IOT based totally power meter gadget in general consists of three fundamental components i.e. Controller, Wi-Fi and Theft detection part. Whenever there is any fault or theft, the theft detection sensor senses the error and circuit response in accordance to the statistics it receives. The controller performs a most important position in the device making certain all the aspects are working fine. Therefore, IoT can enhance the overall performance and effectiveness of the smart grid in most cases in the three phases. Firstly, it will increase the reliability and durability secondly; it focuses on enablement i.e, series and analyzation of records to manipulate lively gadgets inside the clever grid. Lastly, controlling can be achieved by using examining the end result bought from the 2nd segment which helps the grid branch to make excellent decision for future upliftment.

The power meter handy until now can solely manipulate and reveal the electricity consumption of customers.

Several machine the usage of Arduino as nicely as micro-controller have been developed even though the effectively to measure electricity consumption extensively multiplied however due to price nice it may also now not be regarded as the appropriate one.

The traditional meter two has some of the frequent blunders like time consuming, chance of theft error while taking the information and extra human involvement Thus, we proposed a smart system which permits the purchaser as nicely as producer to reveal and manage the strength consumption on extra on the spot basis.

II. LITERATURE REVIEW

1.GSM and Arduino based totally power theft detection and protection, the design, simulation and development of a GSM-based electricity theft have been achieved. It has blanketed more than a few types of electrical energy theft which consist of unaccountability of servicemen, irregularities of billing main to a discount of money with the aid of the utility organizations has additionally been done as this work prevents one on one contact between the stop person and the workers. With far flung monitoring of the meter studying and sending SMS, on every occasion there are unusual readings, in the patron electrical energy meter, the developed machine may also in a position to assist Utilities to minimize the incidences of family electrical energy theft. An automated circuit breaker can be built-in into the unit so as to remotely reduce off the energy provide to the residence or customer who tries to indulge in electricity theft. This machine format by and large concentrates on single section electrical distribution system. Automation of the patron billing machine has been finished as the meter maintains music of the consumer's load on a well timed basis. This design, therefore, gets rid of the guide analyzing of meters with its connected

penalties of time-consuming gadget and consignment manipulation which influences the organization while including greater payments to the consumer. The work additionally revolves round the automated disconnection and connection when the recharge is low or excessive respectively and greater value due to re-connection can additionally be removed.

2. Design of a Smart Energy Meter with Overload Trip Facilities: In this assignment we started out with a proposed method of electricity administration from the consumer point of view so that how one can conscious the consumer from the strength administration so that he can manipulate his load and can limit the invoice and additionally take phase in the power saving. So first we studied extraordinary aspects that are wanted for this project, chosen a micro-controller that is least expensive and fulfill the necessities of our project. ARDUINO UNO is used for this cause and it is programmed in C language, the use of Arduino software program as compiler and efficaciously compiled our code and then it used to be efficaciously loaded to micro-controller. We interfaced extraordinary digital aspects like GSM, ACS712 and Relays to the Arduino on veero board and examined our hardware. Current and voltage are measured for all the three phases and energy is calculated in accordance which administration of load takes place. Whenever the predefined threshold price was once surpassed a message used to be ship to the consumer showing "System Overload". For every phase, unique approach of reclosing is used, Phase I is reclosed by using urgent a button, Phase II reclosed after a length of one minute whilst section III will reclose upon.

3. Development of Arduino Based IoT Metering System for On-Demand Energy Monitoring, This lookup developed an IoT

based totally smart metering gadget whilst inspecting its integration procedure. Using a Composite Design methodology, the work furnished a easy and beneficial answer in the structure of an electricity consumption price Wi-Fi meter. The device used to be proven to be profitable in measuring current, electricity consumption and additionally processing the value incurred by using a customer. These metrics are speaking the electricity consumption and price to the cloud server. This makes it less complicated for clients to view consumption price ubiquitously. An

4. Evaluation with published that the developed IoT clever metering relaxed these necessities viz: Quantitative measurement, manage and calibration, verbal exchange (sending and receiving of statistics effectively); potential to get hold of enhancements from firmware, fine energy management, show as properly as timing synchronization. These are fundamental between the meter and the utility provider's system. In the work, Demand Side Management thought has been satisfactorily achieved. However, the existing lookup presently does no longer cowl ideas for the validation of the machine specification roadmap as introduced in . Hence, future lookup will be carried out to look at chances for an automatic validation of the device specification involving the necessities for extending GSM Wi-Fi communication, with WiMax (4G LTE) and optic fiber for lengthy distance communication. Also introducing an open tampering method in the **IOT** clever meter to display any structure of tampering reducing the load.

III. PROPOSED SYSTEM

This system proposes a new technology in embedded automation is that automation and control of substation in power distribution system can be controlled with help of android application. In this proposed system, substation parameters can be monitored and controlled using smart phone for that an android application have been developed and it is communicated with IOT to give the commands to microcontroller which is used to control and monitor the prototype such as temperature, oil level, voltage, current of transformers and circuit breakers/relays used in substation.

Whenever it detects the fault or the error value, the feedback is given to the android application via GSM technology. Smart phones are very useful for ease access and its main advantage is mobility wherever the users they can control and monitor the parameters. The occurrence of faults can be intimated to users through online notification. Hence the accidents can be prevented at the right time and can also intimate to the superiors as soon as possible.
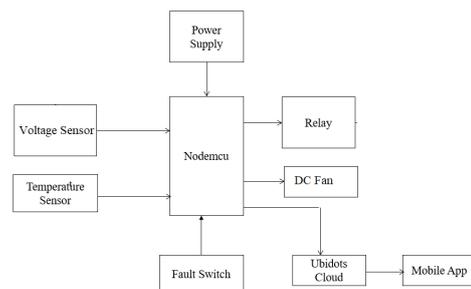
IV. RESULT AND DISCUSSION

The present power scenario in the country is a huge hassle that needs to be overcome. With reference to the current power, the demand is on the higher end when related to supply, making the nation's economic growth lag behind. Smarter electricity helps managing demand on a large scale. This smart grid is being developed with the most advanced

and latest platforms using the latest technologies. It is designed in such a way that it is totally customizable and can adapt future technologies and is flexible for upcoming platforms. NodeMCU are being configured and programmed to monitor the power supply. Automatic phase selectors are dealt in switching to the alternate source when the power in the primary source is not available, thereby secondary sources are utilized efficiently. Smart grids are a better choice in the integration of alternative power sources as well. Thus the outages and the blackouts are considerably reduced.

V. CONCLUSION

The proposed project inherits all drawbacks of the existing system. Here, in this project we have designed a IOT based monitoring and indication system that sends information of the same to control room via Notification. The implemented system design mainly concentrates on the distribution system. It provides the way to detect the faults such as wastage of energy and power theft. The system continuously monitors various parameters of the system Automatic monitoring, analyzing, and recording is done on the cloud screen through Node Mcu. The project has continuous monitoring system integrating the WIFI communication technology and the microcontroller technology. It also represents the hardware architecture and the software flow

VI. REFERENCES

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