Internet Of Things Based Grid Protection

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Abstract—*.The Internet of Things(IoT) and Smart Grid are of great importance in promoting and guiding development of information technology and economic. At Present, the application of the IoT develops rapidly, but due to the special requirements of some applications, the existing technology cannot meet them very good. Much research work is doing to build IoT. WiFi-based Wireless Sensor Network(WSN) has the features of high bandwidth and rate, non-line-transmission ability, large-scale data collection and high cost-effective, and it has the capability of video monitoring, Based on the current research work of applications in the Internet of Things.*

Keywords-Monitoring, Smart Grid, Wireless sensor networks,Internet, Wireless communication.

I.   INTRODUCTION

In Internet of things as in other countries power system operates on interlocking route relay mechanism consisting of two components, grid protection and Grid monitoring in between any two stations. Signal failure may be caused by breakdown in computer network or human error on the part of cabin-men or failure on the part of the Wi-Fi-based Wireless Sensor Network (WSN).Internet of Things(IoT) refers to the networked interconnection of everyday objects. It is described as a self-configuring wireless network of sensors whose purpose would be to interconnect all things. It connects with the wireless network through the interface by the electronic tag (RFID), sensors, two-dimensional codes on objects. Through IoT communication between people and objects can be realized
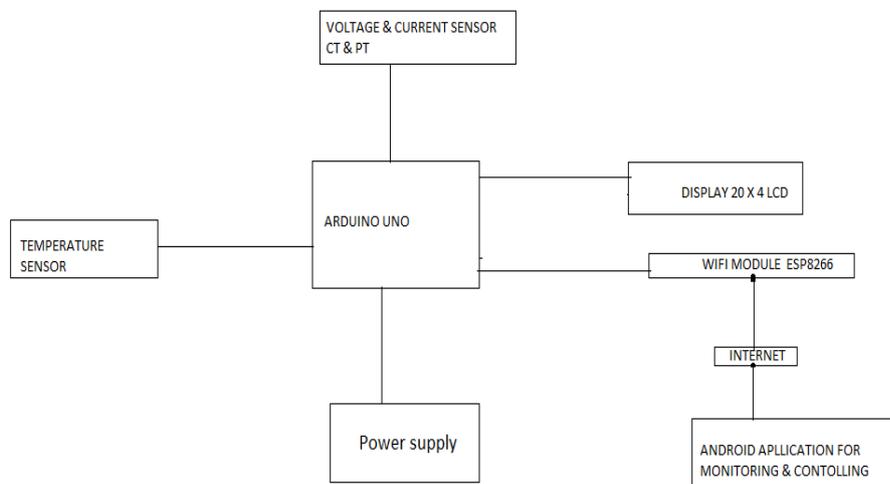
Fig.1 Block diagram

The **internet of things** (**IoT**) is the internetworking of physical devices, vehicles (also referred to as "connected devices" and "smart devices"), buildings and other items—embedded with electronics, software, sensors, actuators, and network connectivity that enable these objects to collect and exchange data.

The Internet of Things(IoT) and Smart Grid are of great importance in promoting and guiding development of information technology and economic. At Present, the application of the IoT develops rapidly, but due to the special requirements of some applications, the existing technology can not meet them very good. Much research work is doing to build IoT. WiFi-based Wireless Sensor Network(WSN) has the features of high bandwidth and rate, non-line-transmission ability, large-scale data collection and high cost-effective, and it has the capability of video monitoring, which be realized with ZigBee. The research on WiFi-based WSN and its application has high practical significance to the development of the Internet of Things and Smart Grid. Based on the current research work of applications in the

Internet of Things and the characteristics of WiFi-based WSN, this paper discusses the application of WiFi-based WSN in Internet of Things, which includes Smart Grid, Smart and Intelligent environment protection.
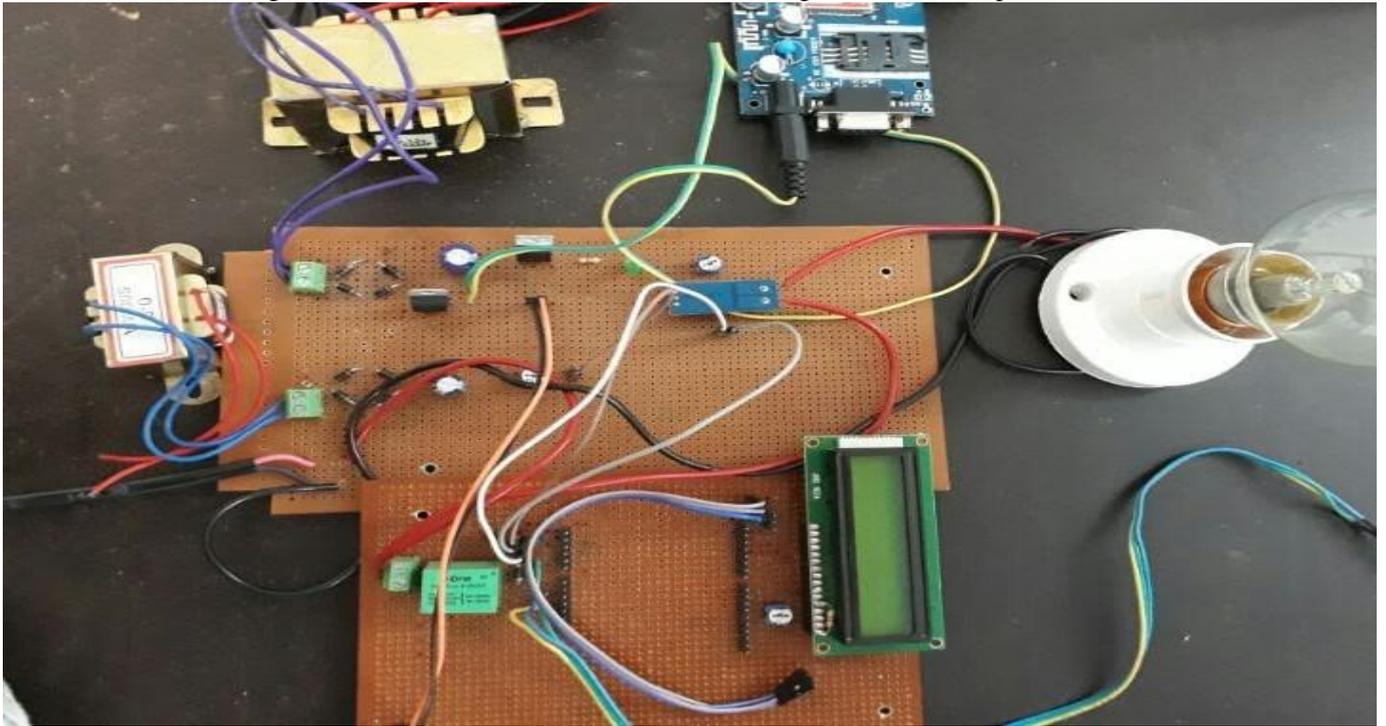
Fig.1 Working model IOT based grid protection.

II. Internet Of Things Techonolgy

The IoT has the prospective to alter the methods of various innovative services and applications, such as observing real-time things, search engine for things etc., and also work with their communication and interaction [5, 6]. The Internet of Things is a vision International Journal of Energy, Information and Communications that includes several technologies like Information Technology, Nanotechnology, Biotechnology and Cognitive Sciences. The rapid increase in the storage capacity and processing power of the devices, global connectivity, miniaturization and self-determining behaviour and the capability of devices to connect and to sense. The potential of the devices to be intelligent act as the technology basis for the IoT and leads to further technological developments. Various technological advances must be carried out by the research community in order to actualize the vision of the IoT from the technological point of view

Sensor Networks: Sensor Network is made up of a huge number of sensing nodes. In Sensor Network, there is a special node called sink, which is used to gather sensing results reported by other nodes in the network. They have an important role in the IoT development. They are used in diverse fields such as e-health, smart homes, military and industry. Sensor Networks can combine with RFID systems to increase objects tracking.

Fig.2 Internet of things frame work
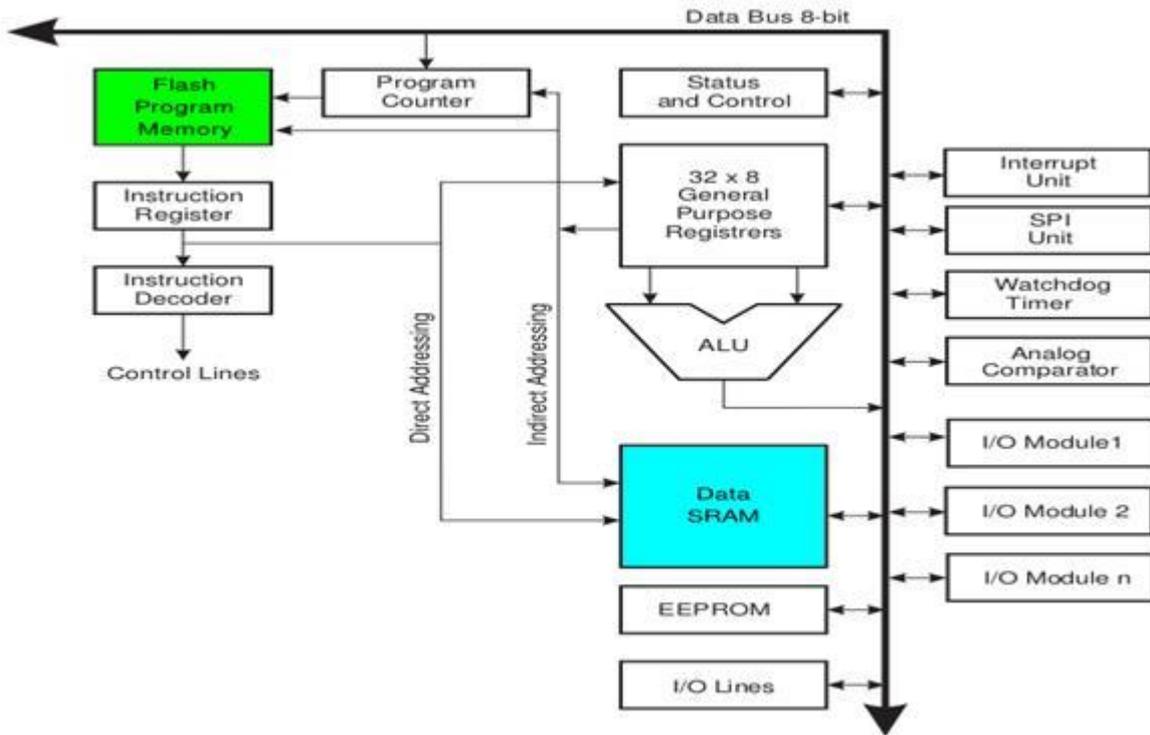
Fig.3 *Arduino Architectur*

III. CONTROL TECHNIQUEIS
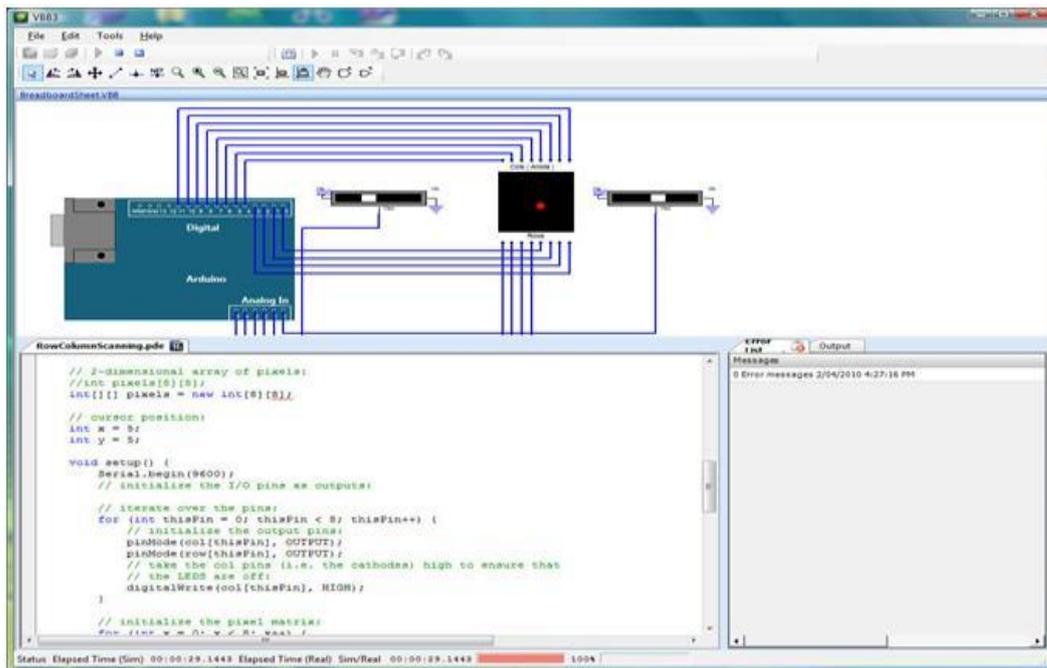
The most important advantage with Arduino is the programs can be directly loaded to the device without requiring any hardware programmer to burn the program. This is done because of the presence of the 0.5KB of Bootloader which allows the program to be burned into the circuit. All we have to do is to download the Arduino software and writing the code.**Few of basic Adruino functions are:**

- **digitalRead**(pin): Reads the digital value at the given pin.
- **digitalWrite**(pin, value): Writes the digital value to the given pin.

- **pinMode**(pin, mode): Sets the pin to input or output mode.
- **analogRead**(pin): Reads and returns the value.
- **analogWrite**(pin, value): Writes the value to that pin.
- **serial.begin**(baud rate): Sets the beginning of serial communication by setting the bit rate
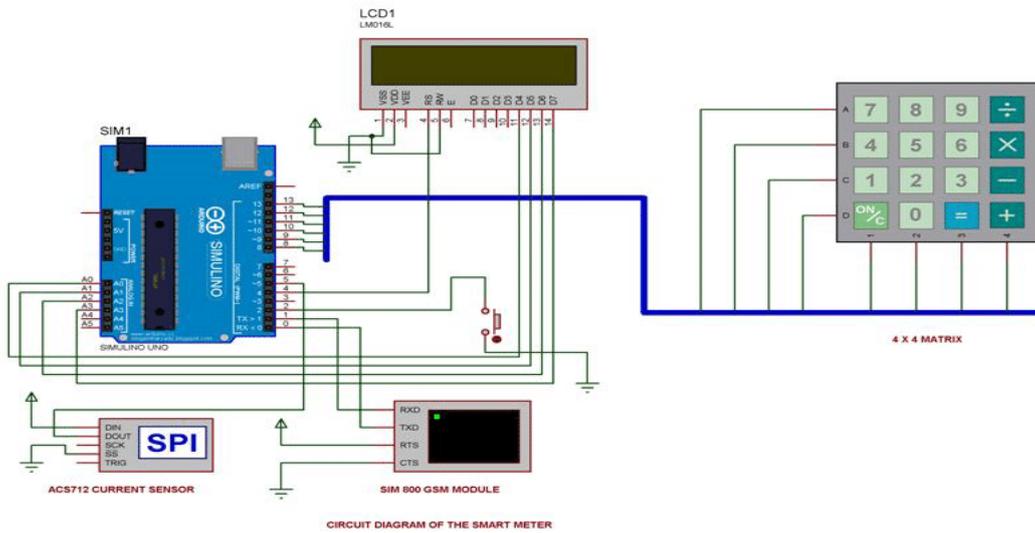
FIG.4 CIRCUIT DIADRAM OF SMART METER
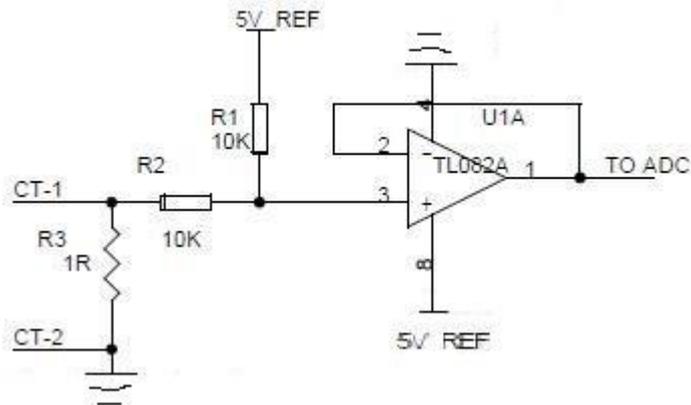
Fig.4 current transformer
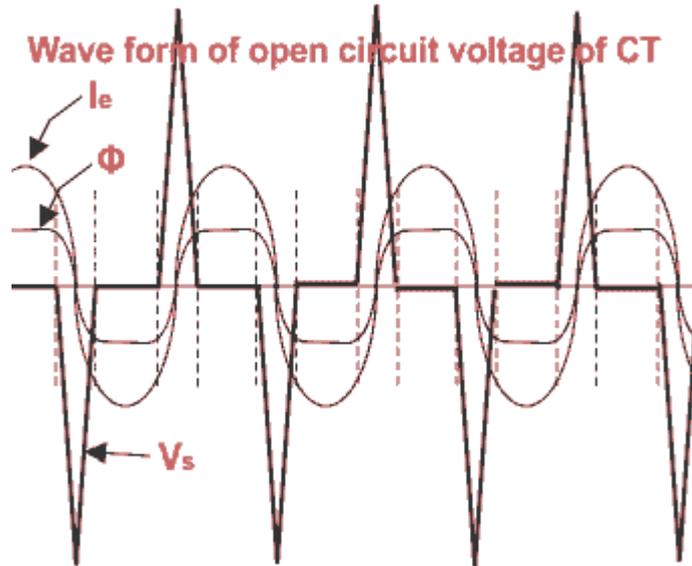
Fig.5 wave forms CT

The current transformer applies to AC power system. The functions are current, electric energy metering and measuring, busbar differential protection, over current protection and distance protection.

Technical Parameters:

设备最高电压 Um (kV) Highest voltage for equipment	额定一次电流 Ipr (A) Rated primary current	额定二次电流 Isr (A) Rated secondary current	测量级 Measuring class		保护级 Protective class		额定输出 (VA) Rated output	额定短时热电流 Ith(kA) Rated short-time thermal current	额定动稳定电流 Idyn(kV) Rated dynamic current	总重 (kg) Total mass
			准确级 Accuracy class	仪表保安系数(FS) Instrument security factor	准确级 Accuracy class	准确限制系数 (ALF) Accuracy limit factor				
252	2×50	5 或or 1	0.2或or 0.2S或or 0.5或or 0.5S	≤5 或or ≤10	5P 或or 10P	15	1S(1A) 30(5A)	5/1s	12.5	540
	2×100							10/1s	25	
	2×150							20/1s	50	
	2×200					20		31.5/1s	80	
	2×300									
	2×400					30	30(1A) 50(5A)	50/3s	125	
	2×600									
	2×800									
	2×1000									
	2×1250									
	2000~4000							63/3s	160	

Fig.6 Circuit Diagram of IOT based smart grid
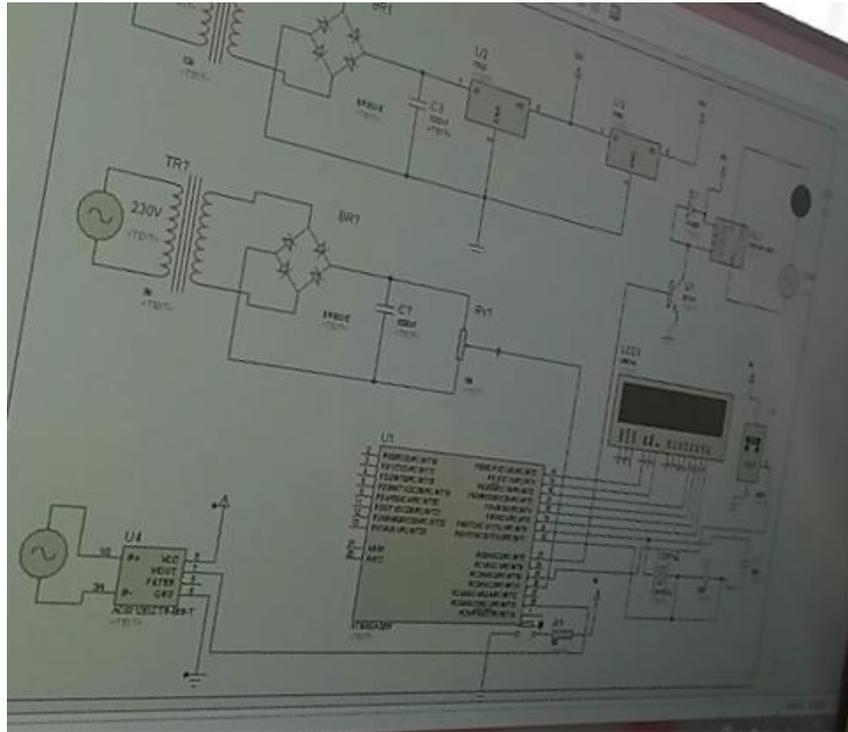
Fig.   Simulation ckt diagram

v.   CONCLUSION:-

"IOT BASED GRID PROTECTION" aims to automate operation of fault signalling and grid monitoring. It shows line sections of a line to demonstrate – Automatic Signalling, Automatic fault Stopping System, power cut automatically, Expected In Minutes, grid Monitoring on PC. The movement control is achieved using wireless remote control. One more important feature is the 'fail safe' system and 'centralized power control' that enables emergency 'Shut Down' during danger or unavoidable circumstances. Thus the "IOT BASED GRID PROTECTION "acts as a electrical power system industries and customers.

ACKNOWLEDGMENT

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