A Real Time Electrical Load Distribution Monitoring and Controlling System based on PLC and Webserver

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Abstract- In our project, we are using electrical load distribution and monitoring of plc and web servers. As our industry power management has become a major issue in the world. So, lower energy only reserves. At present time shut down is the main problem of industry. So, we develop the prototype method. The prototype is one of the software. And also implementing the real-time electrical load distribution monitoring and controlling system based on plc and web server. If the capacity of the distributed line is low, another line will be activated, in parallel. So, we avoid production loss and prevent a shutdown. So, we easily solve the problem and fault. So, automated the process.

1. INTRODUCTION

Energy management it is the main goal to produced the goods with minimum cost. The effect of environment also reduced. so amount of energy is used and profit increase and cost decreases. We using the procedure in system the output will reduced and also reduce the total cost of producing output from system. It is effective and flexible highly competitive world. In production field we reduce the human work and also defined by automation of control system. In automation control is that system it control the process automatically and also reduce the human mentor and mantel requirement. It as ability to initiate and also adjust the process automatically and stop the process when delivered output. In industry automation is important way. To decrease the cords or increase the production. The main goal is production cost is control quality of the product is improved. Productivity also increased. Introduction of paper is in section-2 deals with plc and scada. Section-3 the problem is described.section-4 methodology will be present.section-5 it gives result. Power Distribution Automation (DA) is involved in electric power industry it has been cussed on remote monitoring in principally and control the equipment with distribution system. Advance in metering is also known as two way communication it utilities the electric power in world wide. In electric consumer it is more efficient service. So daily power usage is track by consumer and also understand the consumption patterns of save and control the resources. In many countries including India the electricity is needed for consumer. As increasing the alarming rate at global energy . The electricity can instant how much to use and consume. The service provider of user only allowed to use the power

to allocate the limit of provider. The valuable advantage of monitoring system is avoiding the power. The huge losses of power companies are high electricity cost for customer. In general ,the production is loss. In the company has three categories, Industry, Commercial, Residential. The different objective for consumer is consumption. They detection but there is no arrangement for domestic level. In new technology they can calculate the load automatically and also demands the user. In proposed method, PLC will be new detection method as introduction. In remote locations, the control the data of system. They warned of 3 times of consumer and exceeding the limit and also automatically cut-off the power supply and penalty to the service. After pay the penalty, the power supply will be resumed. The standard management of energy efficiency is starting that "YOU CANNOT MANAGE WHAT YOU CANNOT MEASURE". The feedback of energy monitoring technique is level of energy in certain period. They also give the warning of unexpected excess of equipment. The equipment malfunctions are, Operator error, unwanted user behavior, lack of effective, maintenance. In determine of energy monitoring system is driving factor of HVAC equipments. They available of daylight, weather, production through puts. The instance of energy will identify and explain also un expect of higher (or) lower that visually energy consumption trends.

2. LITERATURE SURRVEY

[1] Smart grid it is the new technology. It communicate the two way process. It reduce the power. His a Home area network it is local center can receive information to remote control center.

[2] It present only load control on industry. In plc and monitors, are using all load parameters of the motors on by using SCADA. It used to multiple energy meters with single plc. It is serial communication.

[3] It is used in engineering application. To monitor and operate and control a lot of process. In SCADA system are essential for intelligent management of resource. It's used in modicum software SCADA it in platform engineering application.

[4] It monitor the electrical disturbance are present every day in electrical power distribution network. It is low

power mc. It developed by mp430. 239v electrical power network in Europe.

3. EXISTING SYSTEM

Now a day's electronic equipments available for remote operation of power distribution system control. But the main disadvantage of these systems is can be operated only short distance. I such a way to overcome the above defect we are using SCADA system.

"PLC and SCADA Based Power Distribution Monitoring" the name itself says that the electrical parameters (voltage, current and power factor) can be monitored in computer PC by using SCADA software. In this paper PLC works as a mediator between low tension power distribution and PC a second level, PLC will collect data related to electrical power and build a link with the consumer side. i.e. the windows us based PC then it provide the continuous power monitoring in keeping with the used load on SCADA.

3.1 HARDWARE USED

* PLC
* Miniature Circuit Breaker(MCB)
* Potential Transformers(PT)
* Current Transformer(CT)
* PT&CT Circuit

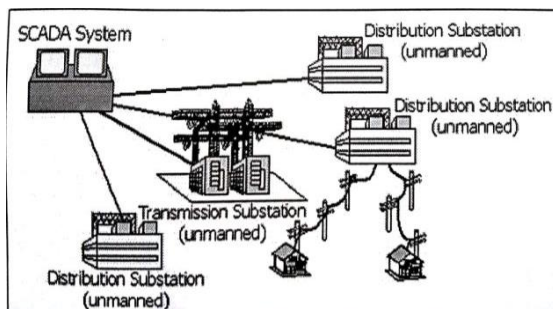### 3.2 BASIC STRUCTURE OF PLC and SCADA

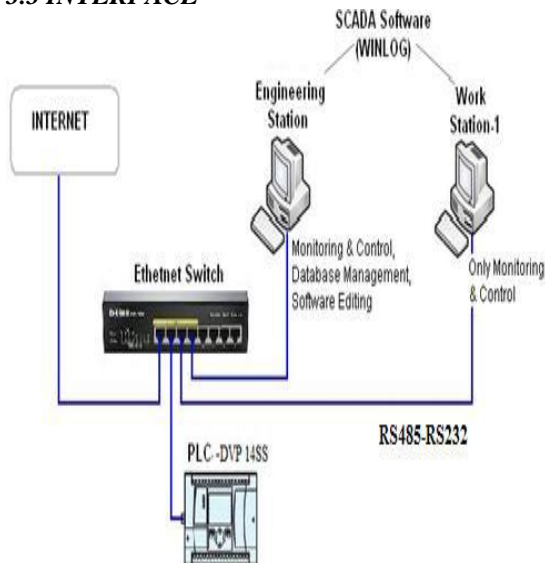Fig: structure of PLC and SCADA

3.3 INTERFACE

Fig : Interfacing of PLC and SCADA

3.3.1 PLC

The PLC is act as micro processed computer and it is carried out control function. It is monitor the process parameter and operations also it controlled a skilled person is to employed. A person of who knows the operating PLC drawing lines and ladder diagram also convert into machine language. If a system having no devices the PLC can operate any kind of these system then it can go and off. In control based the electricity is used on relays. In which can allow the power that is switched on and off without mechanical switch. This is used for to make simple logical control decisions. In this system having many application and equipments needed to embedded devices as interface. It's also used in the substation and it which will control transforms voltages regulation. The auto transfer and reclosing schemes, remote control and diagnostics maintenance.

3.3.2 SCADA

The parameter of account, observing and control with information base the SCADA is utilized. The SCADA application is satisfying the significant capacity on tab setting information gathering and so on SCADA frame work. It's having the control programming. Which the activators and investing information accumulation. The mobile communication sending all alpha numeric messages to subscribers are provided by GSM. The SMS will deliver the all notification and it alerts to the subscribers. The is with user cost communication is ability to get return calls.

3.4 WORKING

In this block diagram we consider only a single phase load for monitoring and controlling. Here we used various equipments for monitoring controlling. A single phase two wire supply is accustomed to load.

MCB, Current transformer is connected in series with load & Potential transformer is connected beyond phase and neutral, the secondary as concerns PT and CT are connected to "voltage and current measurement circuit". The output incurable of this circuit are connected to analog input appropriate to PLC.

Formerly output incurable are founded out to connect single phase load. Then we can monitor and control the load from engineering station and work station with the help of SCADA.

4. PROPOSED SYSTEM

Here we use Cloud Web server based PLC Controlling and Monitoring System as Proposed work. To carry out the load controlling and monitoring of overall system, energy meters, PLC and PC are used. Multiple energy meters with a single PLC CPU connects with a PC to monitor and control required electrical load distribution. Which monitor voltage current and fault occurrence and updated in server. Wireless Sensor Network is used to communicate with PLC and PC with the help of Web server. In transmission line the equipment connected with electrical energy generated with electrical distribution system. A transmission system is a massive interconnected network

consists of mainly AC transmission lines with various high or extra high voltage levels.
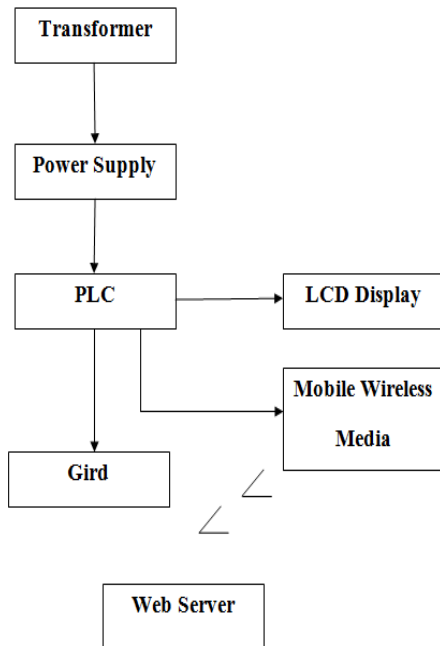
4.1 BLOCK DIAGRAM

Fig: Block diagram for proposed system

4.2 WORKING

A Transmission system is a massive interconnected network. An Interconnected network of transmission system having a AC transmission lines. Its includes with extra high voltage levels. The main advantage of this system is that having a higher voltage. This system can reduce the losses in the Grid. The electrical energy is transported and it from the generating station to the loads, overhead lines and cables. In open country and rural areas the overhead transmission lines are used for long distances. In urban areas is the overhead transmission lines are not suitable for power transmission. So, we can provide cables for underground transmission. Because, the cost of cable is more than overhead lines. Through the cable are used in special situation but the overhead lines are cannot be used.

The majority of transmission lines are overhead lines. In this concept a over head lines having the limited discussion only. The transformers main function is that stepping up voltages from lower generation levels to higher transmission voltage levels. And, a stepping down voltages from the higher transmission voltages to lower distribution voltages levels. In this transmission system main advantage is that having higher voltages and to reduces the losses in the Grid. This transformer operates at constant power. If the current has a lower value due to the voltages is higher. Therefore, a function of the current square in will be lower due to the losses and this is a lower at a higher voltages. In PLC using a extensive support resources and low costs are given to the some of the benefits.

These are basis for the substation automation and SCADA system. Reliability, a large installed base and also the PLC's are extremely reliable. And, this application is

developed the harsh industrial environments. They are designed and operate correctly to over wide temperature ranges. In very high electromagnetic noise and high vibration environments. They can operate well in dusty (or) humid environments. Designers of PLC is allowed to perfect resistance to the negative effects of harsh environments due to the number of PLC'S (in the millions) have been applied in various environments. The PLC of large installed base offers the advantages of reduced costs also readily available low cast spare parts and trained personnel to work on PLC. The manufactures have been more opportunities allowed by the large is installed base and to improve design it offers new products or more varied applications.

PLC has extensive support. So it provide in the US and most of the world. PLC manufactures have the extensive of field offices, distributions and authorized control system integrators. This PLC application is offer the courses of most technical schools and college and also the technical school and college others the PLC's programming and maintenance. The PLC offer low cost solution than traditional RTU's for SCADA systems. The sub stain and distribution automation application along with other benefits due to the PLC based system. This is so much interest and no surprise in the application of PLC's in sub stain.

5. CONCLUSION

The objective of proposed project is to make the system more accurate and the alertness and awareness about the sanctioned load and connected load thus will increase because of the instant action that will be taken by the system. The system which is implemented can distribute the power to the consumer ends. It can monitor the power distribution which is being distributed to the consumers and control the excessive usage of power.

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