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# IMPLEMENTATION OF SUPERVISORY CONTROL SUFFICIENT ENERGY IN SEPARATE AREA MONITORING SYSTEM USING PLC

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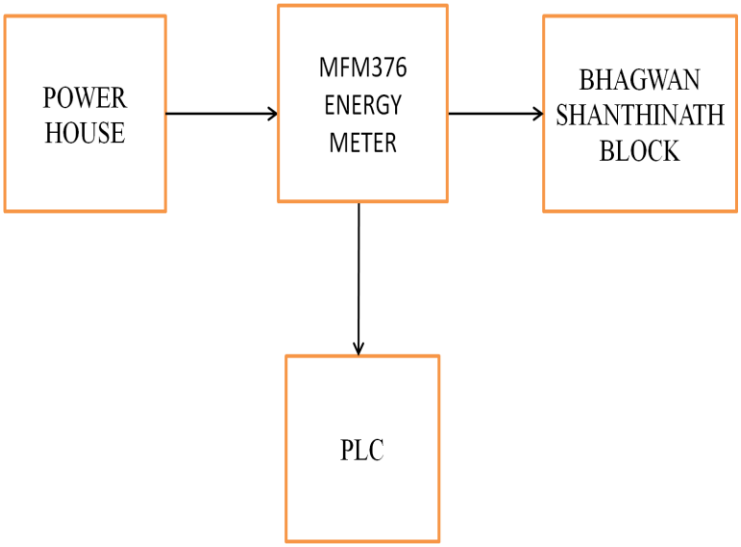
**ABSTRACT:**
Power management has been one of the most talked about topics in the past decade or so because of the decrease in the energy reserves. Power shutdown is a major problem now-a-days and it occurs because a lot of power is wasted in COLLEGE. Energy Meters, PLC's and PC's are used for performing its operations. Multiple energy meters with a single PLC which in turn connects with a PC. The network is obviously connected using RS-485 cables, which provide universality. Hence we connect a converter (that converts RS-485 to Ethernet) between the network of PLC's and the PC.

***Keywords*** *– Distribution Automation (DA) ; Programmable logic controllers (PLC); NI (numeric input); DO (digital output); AO (analog output); PO (pulse output)*

## INTRODUCTION :

Over the past two decades, the electric power industry's involvement in power Distribution Automation (DA) has been principally focused on remote monitoring and control of the distribution systems and their equipments. Advance in metering and communications have meant that electric power utilities worldwide are increasingly adopting the monitoring technology of energy monitoring system to provide better and more efficient services to electric consumer order to establish communication between the electricity meter and the calculation of utility, Programmable logic controllers (PLC)can be used.

## BLOCK DIAGRAM:



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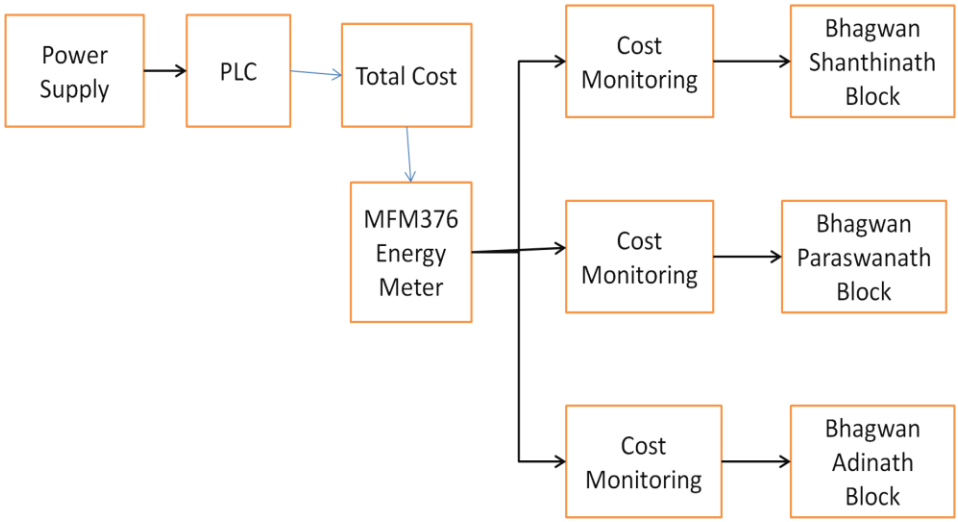
**PROPOSSED DIAGRAM:**




**SOFTWARE REQUIREMENT:**


Genie -NX

PLC OPEARTION SEQUENCE:

1) **Self test**: Testing of its own hardware and software for faults.
2) **Input scan**: If there are no problems, PLC will copy all the inputs and copy their values into memory.
3) **Logic solve/scan**: Using inputs, the ladder logic program is solved once and outputs .
4) **output scan:** While solving logic the output values are updated only in memory when will be updated using temporary values in memory

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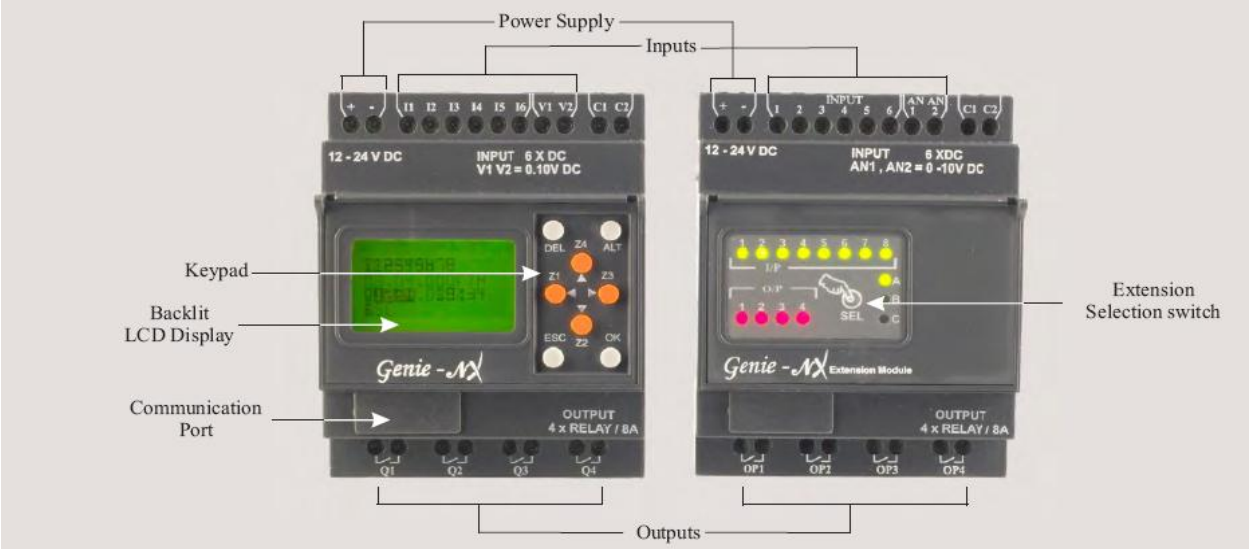
OUTPUT DIAGRAM:




**DESCRIPTION**

PLCs are often defined as miniature industrial computers that contain hardware and software that perform control functions. A PLC consists of two basic sections: the central processing unit (CPU) and the input/output interface system. The CPU, which controls all PLC activity, can further be broken down into the processor and memory system. The input/output system is physically connected to field devices (e.g., switches, sensors, etc.) and provides the interface between the CPU and the information providers (inputs) and controllable devices (outputs).PLC (Programmable Logic Controller) is an electronic device previously called "sequence controller". In 1978, NEMA (National Electrical Manufacture Association) in the United States officially named it as "programmable logic controller".

PLC reads the external input devices, e.g. keypad, sensor, switch and pulses, and execute by the microprocessor logic, sequential ,timing, counting and arithmetic operations according the status of the input signals as well as the pre-written program stored in the PLC. The generated output signals are sent to output devices as the switch of a relay, electromagnetic valve, motor drive, control of a machine or operation of a procedure for the purpose of machine automation or processing procedure. The peripheral devices can easily edit or modify the program and monitor the device and conduct on-site program maintenance and adjustment. The widely used language in designing a PLC program is the ladder diagram. With the development of the electronic technology and wider applications of PLC in the industry, for example in position control and the network function of PLC, the input/output signals of PLC include DI (digital input), PI (pulse input), NI (numeric input), DO (digital output), AO (analog output),and PO (pulse output.

**OVERVIEW OF THE PROJECT:**

Readings from n - energy meters are collected automatically by the PLC's, PLC1 to PLCm and the data from each PLC issent to a RS485 to Ethernet Converter (to make the readings compatible with Computers).From the converter, the data is fed into a hub, so that many PC's can have access to the data.Further, a copy of the data is also sent to the database server (Back-end) to update the database

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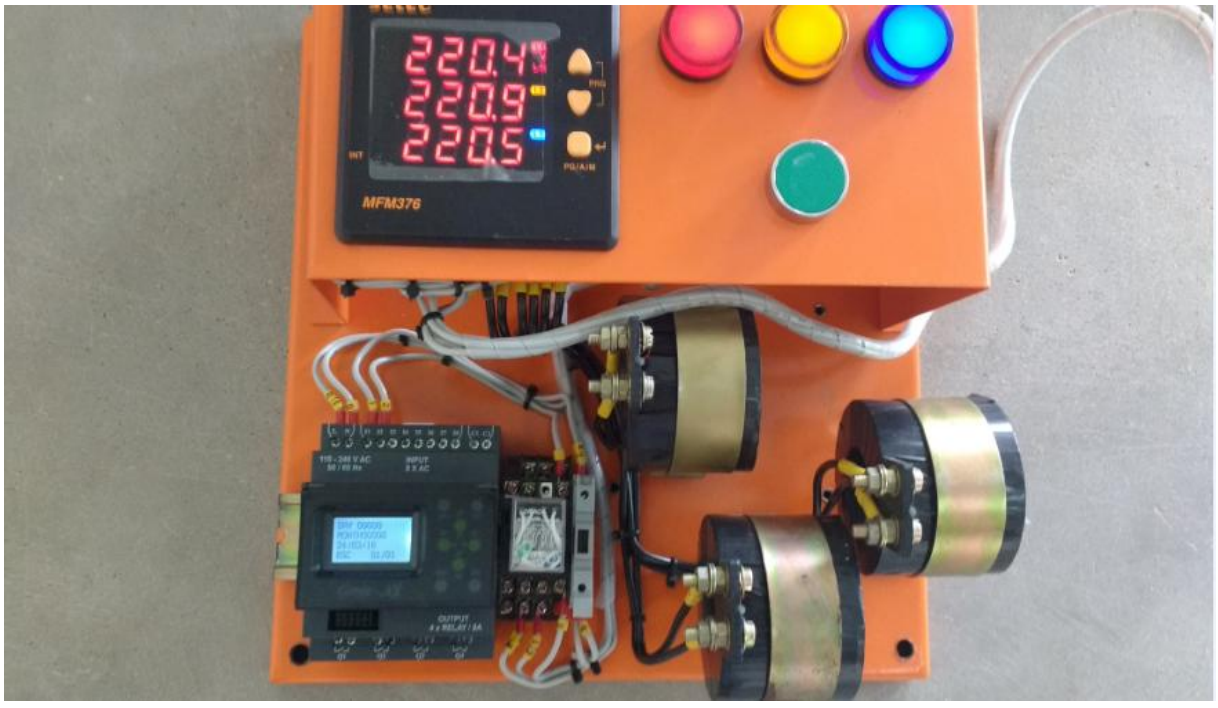
**HARDWARE OUTPUT**

**CONCLUSION:**

Automation of the energy management system has been achieved. We have also enabled the world-wide access of the energy management system by connecting to internet**.**

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