MONITORING AND CONTROLING OF POWER SYSTEM USING PLC

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ABSTRACT: By using this project, we can developed total power distribution system using step-down transformer, distributed all substation and feeder, these all are controlled by PLC and SCADA system. If any problem or fault or Energy theft activity done at any instant of time so, we can get notification from SCADA system with alarm. And also by using some communication base energy meter, we can find out the energy drop in such area or society. So, we can easily find out any problem which occurred in the system also get the information about all the data. After finding out the problem we can make some correction in that by using SCADA system.

By using PLC and SCADA Controlling System, we can operate our metro city with energy saving, energy controlling, Anti power thief activity, power controlling, power safety, security, fault findings etc.

Keywords: PLC, SCADA, energy meter, contactor, SMPS.

1. INTRODUCTION

In fast growing generation nothing is possible without electricity. Day by day electricity demand is increases and In Present time we having many problems about electricity like, Energy saving, Energy controlling, Power saving, Power -controlling, Energy theft activity, Security, Fault finding etc.

We can not got the particular data as date wise and we can not got perfect consumption as area wise also we can not got directly data from the system, That's why we need some intelligent control system so, it can be solved problem that we are facing.

We know about all problem solution and controlling is much difficult in developed country. That's way we need some intelligent control system for these problem solved in our city

That's why for this problem I can use best power management using PLC and SCADA Controlling System.
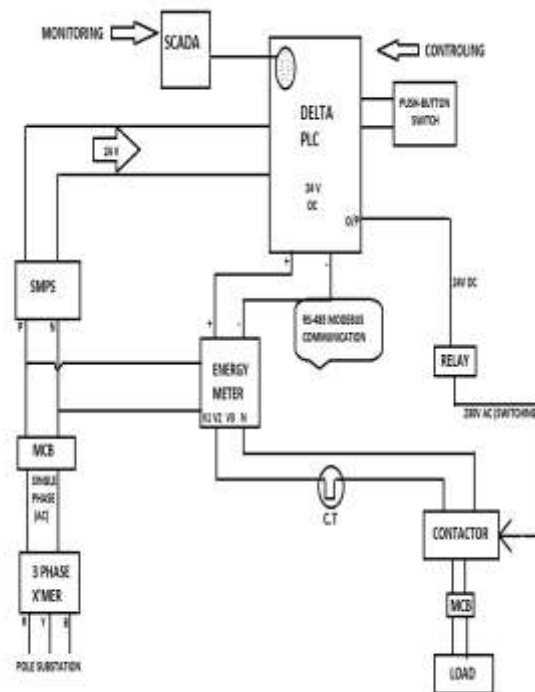
2. Block diagram

Fig1. Block Diagram of Project

- In this block diagram shown our project. In this first single phase power supply connect with SMPS and SMPS is convert 230V AC to 24V DC and its 24V given in Delta PLC for power of PLC.

- Here we have 485-Mod-bus communication with Energy meter and Delta PLC for Energy meter Data Controlling and monitoring. Than after SCADA system connect with PLC for monitoring of PLC and energy meter Data communication.
- In the energy meter Output we have connect load for Data reading and monitoring. Between Load and energy meter have connector for Load switching by Relay and its Connector 230V switching by PLC output on Programming.
- This above connection we control load by Manually and Automatically.

3. Circuit Diagram & Analysis

- By using PLC and SCADA Controlling System, we can operate our metro city with energy saving, energy controlling, Anti power thief activity, power controlling, power safety, security, fault findings etc.
- We know about all problem solution and controlling is much difficult in developed country. That's way we need some intelligent control system for these problem solved in our city
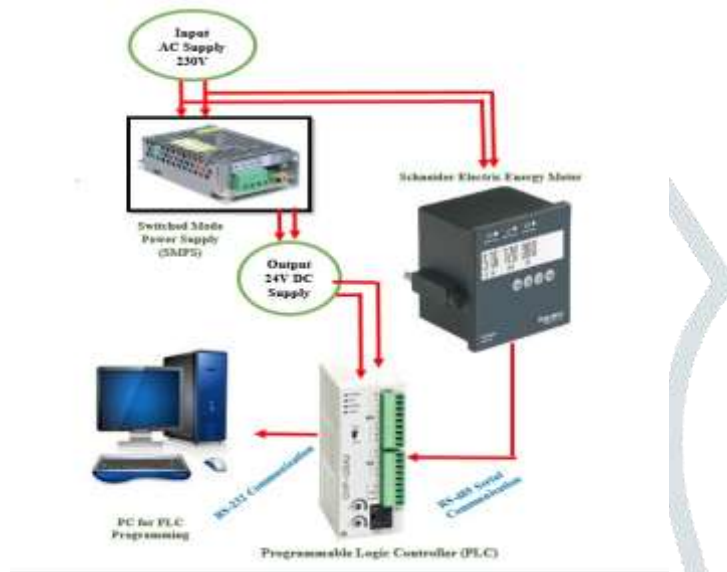- That's why for this problem I can use best power management using PLC and SCADA Controlling System.
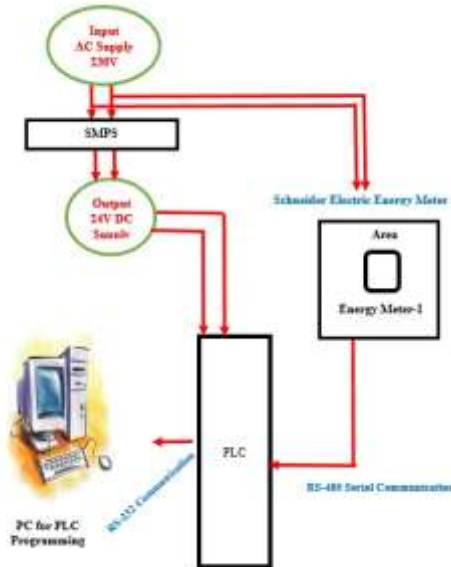

Fig2. Circuit analysis-1

Fig3. Circuit analysis-2

4. Implementation of Hardware

- In this hardware implementation is we Change CT and output load value Increase for Energy meter Data reading because energy meter data depend on Output of Energy meter.
- And change programme and add timer for output loads time duration. And assemble STOP and START buttons for manually operation.

5. Advantages

- Reduce the Work
- Reduce the Human Work
- Fast Response
- MODBUS Communication used
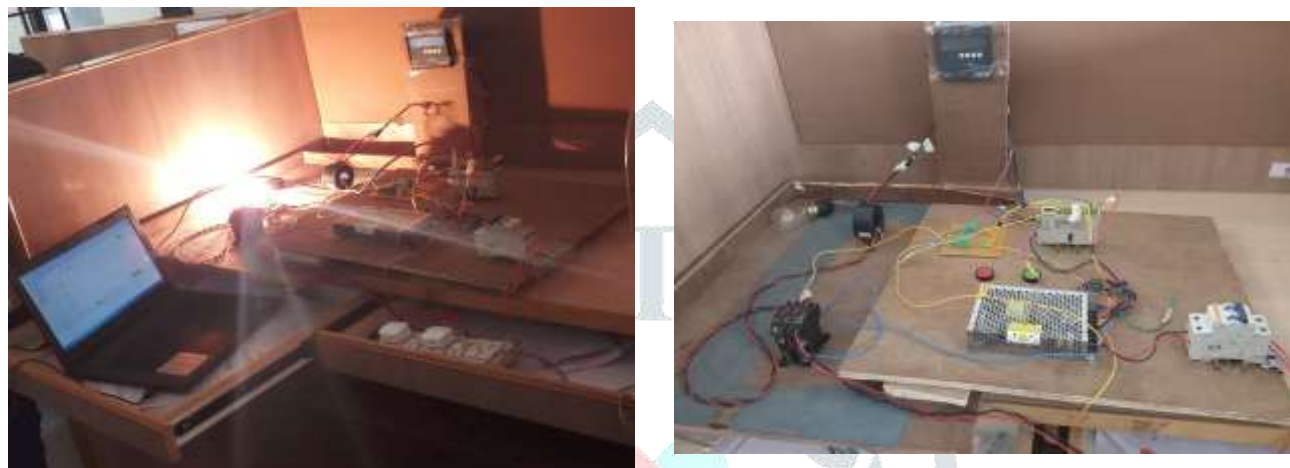- Easy Monitoring
- Easy Controlling

Fig4. Hardware Model

6. Conclusion

- By using PLC and SCADA Controlling System, we can operate our metro city with energy saving, energy controlling, Anti power thief activity, power controlling, power safety, security, fault findings etc.

References

[1] https://onlinecourses.nptel.ac.in/noc17_ec08/preview

[2] https://www.electricaltechnology.org/2015/09/scada-systems-for-electrical-distribution.html

[3]http://electrical-engineering-portal.com/download-center/books-and-guides/automation-control/study-scada-system-plc(An Industrial training report – Study of SCADA System and PLC – Mr. Sonu Kumar Yadav, B-Tech 3rd yr, Electrical Engg.)