

# Automatic Control of Power Transfer System using PLC

S. S. Patole<sup>1</sup>, B.C Gawade<sup>2</sup>, K.K. Mergal<sup>3</sup>, A.H. Bhosale<sup>4</sup>, A. C. K. Badve<sup>5</sup>

<sup>1</sup>Assistant professor of Parikrama College of Engineering Kashti, Maharashtra, India

<sup>2,3,4,5</sup>Student of Parikrama College of Engineering, Kashti Maharashtra, India

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## ABSTRACT

Power management is an important constraint in the design of various loads in industries for automation. So if power consumption increases then the substation monitoring is very important for the purpose of controlling the hardware and software optimization with the help of PLC ladder logic system and SCADA were used.

This technique in order to reach strong conclusion about their actual impact on the power grid monitoring and control without manpower. The basic idea behind substation control project is to monitor the switchyards in substation. In substation many relays and circuit breakers are used. When any one breaker is trip because of the problems, we can monitor and control through SCADA windows. In power management project, the computer is used for assigning the priority for various loads. The signals are given to the computer of the electricity board where there is the electronic control unit which controls the sequence of disconnecting the load. On basis of controls from the computer the breakers are managed and in computer the SCADA system is installed which is used for monitoring and control. If there any problem occurs in plant, we can easily identify which part is trip. After that we can troubleshoot the problem through manpower and monitor the substation.

Keywords: PLC, Relay board, Contactors, Program logic.

## I. INTRODUCTION

The regular tricycles are presently being used to provide mobility for disabled persons in a rural community in Maharashtra, India. Below is a photograph of a boy in Maharashtra on his hand-powered tricycle. The map on the right shows the location of Maharashtra. With this project we designed and manufactured a system to convert the hand powered tricycle to an electric motor powered version.

We essentially created an affordable, rugged electric wheelchair for use in a developing country. We have worked to make our design appropriate to the culture where it will be used. This meant designing for the use of locally available parts and manufacturing capabilities. The result is a system that can be almost entirely replicated, with the exception of the motor and motor controller, with familiar parts, tools, and processes. Using the hand-powered tricycle as the basis for our design made the Electric Tricycle more of an

appropriate technology because it uses a familiar, locally available platform as a starting point. In Maharashtra there are currently four potential users of the Electric Tricycle.

## II. OBJECTIVE

The main objective of power system operation and control is to maintain continuous supply of power with an acceptable quality, to all the consumers in the system. The system will be in equilibrium, when there is a balance between the power demand and the power generated.

Also Our power System will be very costly so needs protect the system is very important point and maintain the power continuity and increase the reliability.

## III. Part of projects

PLC

Allen Bradley 1400 PLC is used in Project Which has 20nos inputs and 12nos output is available  
This main input power of PLC is 24vdc



Fig. PLC

### PLC Program & Software

**Rs Logix links** -the main purpose of this software is communication with PLC

**Rs Logix 500 English** – This Software is used for programming in PLC. ladder language is used for programming the PLC

In Programming Number of Inputs and outputs, bits, and Timers is used.

## CONTACTORS

In this project Contactor is used as circuit breaker which is make and break the circuit under the normal and abnormal condition as per of condition



Fig contactor

Fig: actual project.

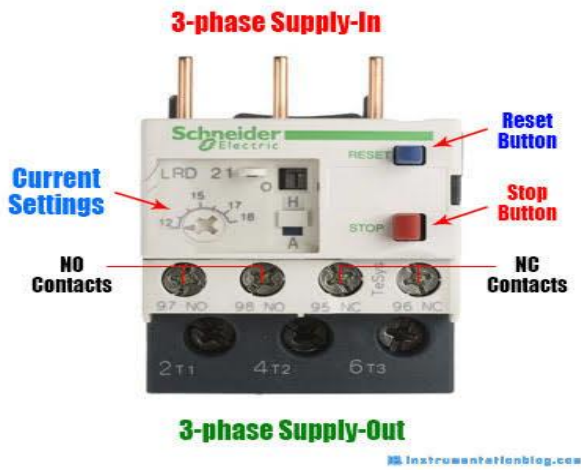
V Testing of project

### Motor Specification

1. Power=250 watt
2. Voltage= 36 volt
3. Max Current capacity=5 Ah
4. Speed in rpm=336.0 rpm

### OVERLOAD RELAY

in this project overload relay used for tripping purpose, when load is increases than actual set value then relay trip.



#### IV. ADVATAGES

1. It is a highly energy efficient system.
2. Using PLC AND SCADA minimizes the operating costs.
3. It is easy to handle
4. It is a safe and easy to understand
5. Long life

#### V. DISADVANTAGES

1. The Initial cost is high
2. Require training to operator
3. For troubleshoot skill person require

#### VI. APPLICATION

1. It can be used in the substation for the protect the power system.
2. it also can be used in generation side.
3. It can be used for transmission and distribution side also
4. It can be used MSEBS, and industrial sector also

#### VII. CONCLUSION

PLC provides management with Realtime data on production operations, an implement more efficient control paradigms, improves plant and personnel safety, and reduces costs of operation. The proposed model that illuminates the categories of data, functionality, and interdependencies present in a SCADA. The model serves as a foundation for further research on how to best apply technical controls in substation and domestic distribution areas

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