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A Review :Design and Development of Smart Automated Door Control System For Dam

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Abstract—This paper focused on the controlling & monitoring system for automated dam i.e. irrigation & evaluation of river water quality department using automation (PLC & SCADA). Such as paper belongs to different types of sections , how dam door controlling works on PLC ,as forward ,how system handles section of motors i.e. DC motors, SMPS etc. Dam door controlling system also deals with the monitoring structure i.e. SCADA part of the system. SCADA provides you the visualization structure that makes safety of natural water assets becomes important issue ,on-site monitoring on water quality parameters with measured equipment.

Keywords : PLC(programmable logic controller),SCADA(supervisory control & data acquisition system),SMPS,DC motors.

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1. INTRODUCTION

Programmable Logic Controller (PLC)

Programmable logic controller is an abbreviation for relay functionality,thus replacing hardwired relay logic,which has been operate over electric device. Programmable controllers within computer family using integrated circuits instead of electromechanical and automation devices to implement control functions.its been capable of storing instructions like wise timing, sequencing, arithmetic,data manipulation,communication and counting to control over industrial machines & processes,figure shows conceptual diagram of PLC application.
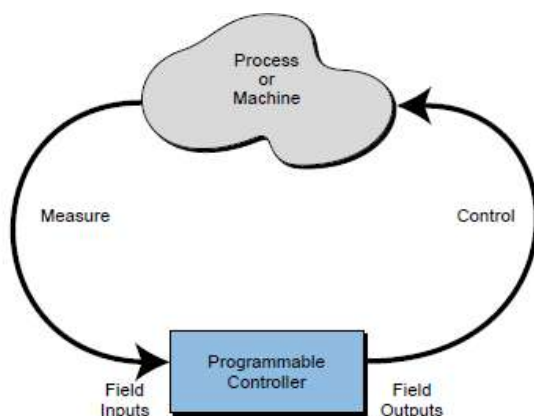

Fig. PLC conceptual application diagram

Programmable controllers would have many definitions where,PLC's can be thought of in simple words as industrial computers with special designed architecture,in both their central units (PLC itself) & their interfacing circuitary to field devices.

Programmable controllers were noted primary function to perform the sequential operations that would be implemented with previous relays.

PLC is based on microcontroller device consist of input-output sensing devices, such as input devices include status of field connected sensors and output devices include the actuators such as motors ,starters, speed driver etc. Major difference in between PLC & other microcontroller is that ,it will extensively used in hot and humid temperature,cold conditions etc.
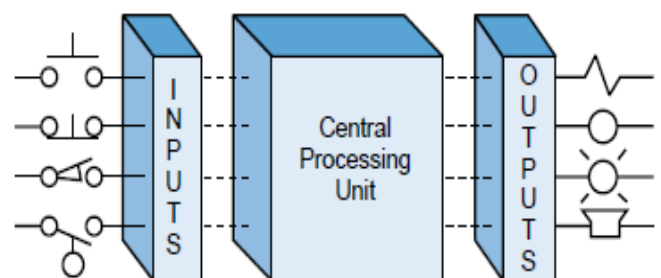

Fig. Programmable controller block diagram

Programming Languages

Programmable language in programmable controllers have been involved since inception of PLC in late 1960s. there are 3 types of PLC languages : ladder, boolean & grafcet

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As PLC,expanded & overlook either programming languages have been developed with them ,analog and digital modules with obtaining data to followed through instruction itself.

Supervisory Control and Data Acquisition (SCADA)

General overview of industrial control system is an term that concludes different types of control system. PLC skid mounted on SCADA & DCS in critical infrastructure.SCADA has been used to control on geographically dispersed asstes ,its been diffuse with centralized data acquisition & manage over critical system to operate on thousand of square kilometers.

Typically ,it would be used in distribution system like water distribution,waste water collection systems , oil & gas pipelines etc. often we generally know PLCs are computer situated solid state accessories that control industrial automation process.SCADA basically designed for long distance communication system to control complicated distribution processes.

SCADA is for monitoring software with PLC which user have been worked on them, serial communication i.e. RS 232 to communicate over PLC using SCADA.input commands provides to PLC , then modified & corrected in SCADA software.
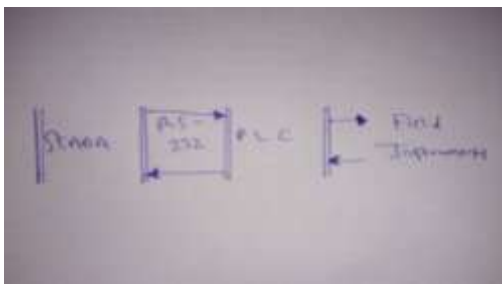

Fig. interfacing of SCADA with plc system
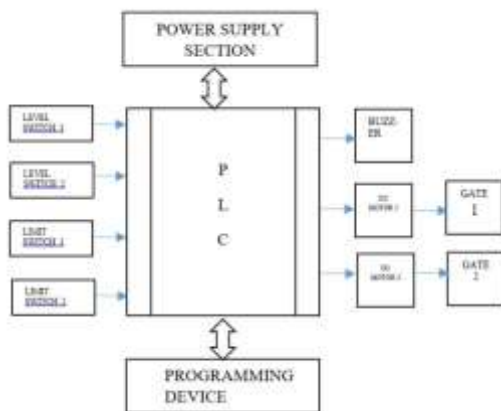
2. Dam Door controlling Architecture

Fig. schematic structure of dam door controlling

Components of dam door system

- Tank/cooler container

- Micro-switches

- Plc kit

- SMPS

- DC motor

Implementation of dam door controlling generalize over programmable logic controller and SCADA system for visualization .system provides two levels ;one level at upper and one level at lower outputs where ladder logic actuated.PLC provide 20 inputs & 12 outputsto control system development.

3. System how works ?

Algorithm

- Level switch 1

- _buzzer -5-10 secs.

- D1-forw-on

- Limit switch 1

- _d1-forw-off

- LS2=1

- _ buzzer _5-10secs.

- D2-forw-on

- Limit switch2=1

- _d2-forw-off

- Ls2=0_d2-Rev-on

- (After 5secs.)

- _d1-forw-off

- Ls1=0_d1-Rev-on

- (After 5secs.)

- _d1-forw-off

- Ls 1-d3-1

- _d3-forw-on

- Lim swt-3=1

- _d3-forw-off

- Ls2-d3=1

- _d3-rev-on

- (after 5secs.)

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- _d3-rev-off

(Ls –level switch, d-door, lim-limit, rev-reverse, forw-forward)

Conclusion

In this paper , it represents an automated regulating of system with PLC and SCADA architecture .model of dam door controlling will directly communicate with dam gates and control level of water, level which has been increased by opening and closing of dam gates. therefore dam door controlling architecture associated with entire plant and store the details with dam gate movements.

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