International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395 -0056
Volume: 03 Issue: 02 | Feb-2016 www.irjet.net p-ISSN: 2395-0072

"OFFICE AUTOMATION USING PLC SYSTEM"

Mr. Z. A. Patil[1], Mr. A. D. Patil [2], Mr. J. V. Patil[3], Mr. V. A. Patil[4]

[1]B.E. Student, Dept. of E&TC Engineering, ADCET Ashta, Maharashtra, India
[2]B.E. Student, Dept. of E&TC Engineering, ADCET Ashta, Maharashtra, India
[3]B.E. Student, Dept. of E&TC Engineering, ADCET Ashta, Maharashtra, India
[4]Assistant Professor, Dept. of E&TC Engineering, ADCET Ashta, Maharashtra, India

---

Abstract –*Our paper is based on office automation system. The system shown in paper is basically used to save power consumption and save time. The system uses PLC as it can handle number of inputs and outputs. And sensors like flame detecting IR sensor, keypad and limit switch are interfaced with PLC to control specific and desired office systems like gate, fire and light control.*

Key Words: PLC, DVP-ES2.

1.INTRODUCTION

The continuous growth of Industrial development in India, the industrial offices/official complexes are increased. To maintain the daily routine of offices it will require huge amount of manpower. To handle visitors in offices also require manpower like security staff clerks etc.. In these cases to enter the visitor in office it has to follow lengthy tradition process. In this process lot of time will be lost. In cities lot of office complexes are going to manufacture but the height of building is also high. In those complexes the emergency systems are not developed to handle Fire.

In this Project Office Automation Using PLC system we are designed the total office automation with consideration of safety system and power saving concept. We are developing this system with following points:

- Automatic office entry gate for visitors.
- Automatic Fire Fighting System
- Automatic ON/OFF staircase and movement area lighting.

All the above points are designed in such a way that we will provide this automatic system which will save power, manpower and take emergency actions against fire.

2. PLC system

DVP-ES2 series provide 16-60 point PLC and 8-32 point digital i/o module. The maximum input output points including those on the PLC are 256 points. DVP-ES2 series PLCs satisfy various applications in that they can be used with analog input or output module.

Figure 1: DVP-ES2

The PLC program and latched data are stored in flash memory. DVP-ES2 is an OPEN-TYPE device. It should be installed in a control cabinet free of airborne dust, humidity, electric shock and vibration. To prevent and accident from damaging DVP-ES2.

The power input type for DVP-ES2 model is AC input. With operating DVP-ES2 range of input voltage should be 100-240 VAC. The AC power input for the PLC and digital input/output module should be ON or OFF at the same time.

2.1 Push Button System

Figure2: Push Button System

This keypad used to enter specific code given to user. When a new visitor come to at company gate after entering valid code of particular employee and when that code accepted by employee then gate will open for a short time.

2.2 Flame detection sensors

Flame detection sensors a flame detector design to detect presence of fire. A response to a detected flame activates a fire suppression system. A flame detector can often respond faster and more accurately than a smoke detector due to the mechanisms it uses to detect the flame.

Figure 3: flame detector sensor

3. System concept

3.1 Automatic office entry gate for visitors.

It consists of office code number box situated at entry gate. So when visitor come at gate he will push the specific office number .After entering the office code PLC system will initiate call to specific office after accepting of call form required office person only the entry gate will open. And gate will close automatically after few seconds.

3.2 Automatic Fire Fighting System

As per current growth in official complex and heights of building, in emergency fire cases it is very difficult to handle the situation at higher floor flats. If any fire will occur at 10th floor the municipal firefighting vehicles are not able to handle fire at this level. So this project is invented such a way that automatic fire handling system with immediate detection of fire at any office in apartment/industry. It consist of smoke detection system which can give details to PLC and as per program PLC will take immediate action and start fire handling at specific office in industry/apartment.

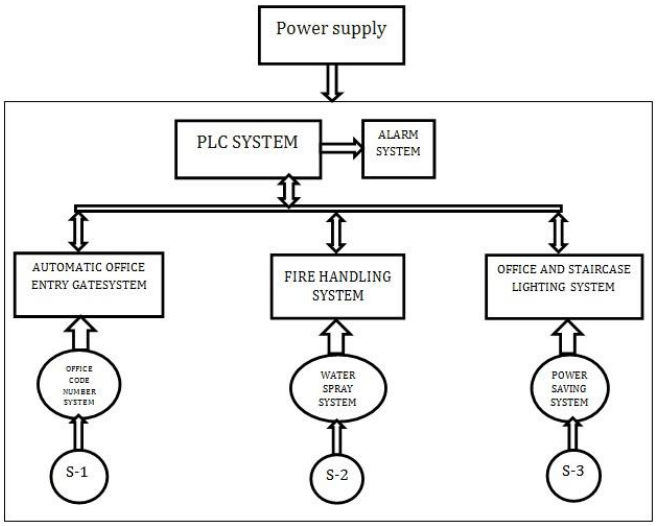

Figure 4: Block diagram

3.3 Automatic ON/OFF staircase.

The current need of electricity is very high as compared to generation of electricity. In this project we are developed automation system which can handle staircase and office lighting system as per requirement and time base by the use of PLC system. For example after specific time as per requirement 50% of light gets turned off. PLC system will be providing automatic power ON/OFF for office movement area and staircase with specific time as per program to save electricity.

3.4 flow chart

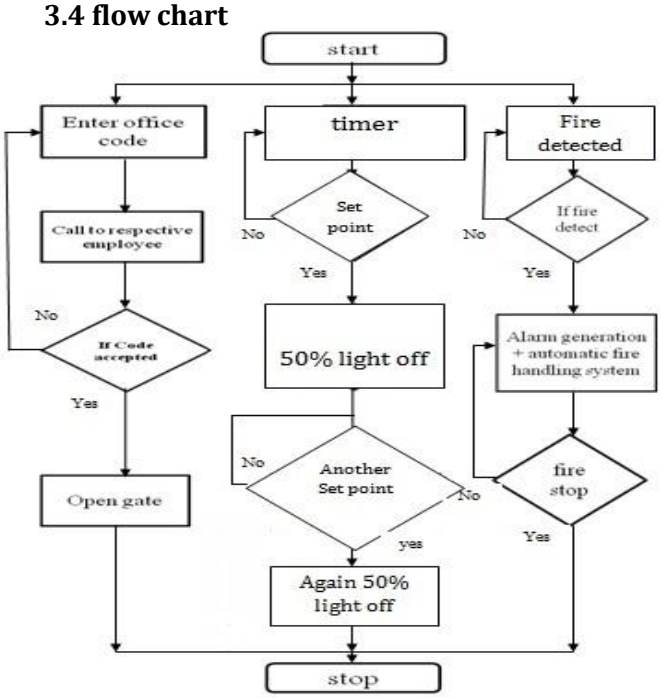

Figure 5: flow chart of system

4. Desired output

In our office automation system we are using buzzer, gate, and water valves as the outputs.

We have used keypad as input to Gate system. If visitor enters a specific code given to him, an indication is made to person he wants to meet. If the code is accepted the gate is opened for specific time as per the timer is set.

In case of fire system, when fire is detected by Flame detection IR sensor then buzzer starts to ring and PLC detects on which floor there is fire and water valves on that floor are turned ON. When fire ends buzzer and water valves are turned OFF automatically.

Automatic light ON/OFF control system is timer based. In this system as per the user requirement light ON/OFF is controlled. If any person is present at office after the specific time set in timer, light can also be controlled manually.

5. CONCLUSIONS

The aim of this has been to integrate modern technologies with a view to enhancing the current power solutions available, with a view to betterment of mankind. Office automation is currently a new growing field in Science. The goal of this automation is controlling the office elements like gate, lights in order to save energy, fire detection alarm and raise the quality of living. In this project in order to make life easier some smart office applications are designed. In this project office automation is done using PLC technologies. System is developed with automatic gate opening and closing, fire detection and light controlling. Gate opening and closing is controlled by landline using PLC system. Fire detection and light controlling is developed using smoke sensors and motion sensor under PLC.

REFERENCES

1. Verma, G. K.; Tripathi, P., "A Digital Security System with Door Lock System Using RFID Technology", International Journal of Computer Applications (0975 – 8887), 2010, Vol5, pp 6-8.
2. Salim G Shaikh and Shankar D Nawale., "Secure access of RFID system", International Journal of Scientific & Engineering Research, Volume 3, Issue 8, August-2012
3. Y.Usha Devi, "Wireless Home Automation System Using ZigBee", International Journal of Scientific & Engineering Research Volume 3, Issue 8, August-2012 1 ISSN 2229-5518
4. Ahmad.A.W, Jan. N., Iqbal S. and Lee C., "Implementation of GSM-Zigbee based Home Security Monitoring and Remote Control System" IEEE 54th International Midwest Symposium on Circuit and Systems, 2011, pp. 1-4.
5. Vini madan, SRN Reddy,"GSM-Bluetooth based remote monitoring and control system with automatic light controller", International journal of computer applications (0975-8887) vol. 46 no.1, 2012.

BIOGRAPHIES

Mr. Zunjar A. Patil

He is studying in Annasaheb Dange College Of Engineering and Technology, Ashta, MH, India.

He is student of electronics and telecommunication department.

Mr. Amar D. Patil

He is studying in Annasaheb Dange College Of Engineering and Technology, Ashta, MH, India.

He is student of electronics and telecommunication department.

Mr. Jivan V. Patil

He is studying in Annasaheb Dange College Of Engineering and Technology, Ashta, MH, India.

He is student of electronics and telecommunication department.

Mr. V. A. Patil

He is working as Assistant Professor in Annasaheb Dange College Of Engineering and Technology, Ashta, MH, India.

He is having 2 years and 7 months of teaching experience. Area of specialization: Digital System