Electromechanical Traffic Management and public transport system

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Abstract— "Electromechanical Traffic Management and public transport system" helps the Government to ensure the safety of public on the cross roads. This Device can be operated automatically by a certain program coding for the traffic management the device is triggered by the push button which gives the command to the input processing unit which transfers the data into the PLC. PLC will. gets the input single and it gives the working command to the DC motor an then the Dc motor gets the spikes up on the normal ground level to stop the all vehicles Conventionally, simple 3 LED lights system is used but it is not more efficient the 3 led lights system has many bugs in it ad no one follows the 3 led lights system if the traffic police is not performing duty on cross roads so instead of that system if we install the Electromechanical Traffic Management and public transport system it will help the government for the better and very efficient traffic management and public safety In this project, the Electromechanical Traffic Management and public transport system is controlled by the plc. System and the final control is in control rom.

Key words: Traffic Management, PLC

I. INTRODUCTION

A. Overview:

"Electromechanical Traffic Management and public transport system" will be applied on cross roads. The prototype will stop or reduce amount of accident near or on the cross roads. This device will open the spikes after exact time so the management of the traffic will be monitored and controlled only from one place or automatically. This device will support the public transport system and provide them the automatic assistance of the transportation and it will make the transportation fast reliable and convenient for the travelers. It will be used to control and locate the bus for easy and convenient transport. The title of our project is, Electromechanical Traffic & Public Transport Management System. It is combination of Electronics and Communication. (E&TC)

First part which is Traffic Management System is based on Electronics, and the public transport alert system is based on communication. In first part we will use PLC SCADA system & in the second part we use some of the networking system concepts.

By the help of the Electromechanical Base Traffic Management System people follow the traffic rules. And by the help of Public Transport Alert System, people can see the location of the bus and get alert signals for the desired bus.

B. Problem Statement:

When we look at the cross road, in the urban areas, at time it is observed that people do not follow the rules as a result, it creates a road blockage or heavy jams.

In India more than nine thousand persons are killed in road accidents every year and probably some two hundred thousand are injured. In other words, around 25 people are killed and more than 500 are injured every day on Indian roads. Some of the injured are handicapped for life. Many of the victims are young, which means that major parts of their lives are totally or partially destroyed. People also avoid using zebra crossing and which leads to number of problems (at times accidents also).

When we look at the bus stops in the urban areas, at time we have found that the passenger travelling through public transport they do not have adequate knowledge and information regarding different schedules and routs of buses. Which create lots of inconvenience and unnecessary wastage of time.

C. Project Objective:

The overall long-term safety vision is that nobody should be killed or seriously injured (as a result of a road accident) on roads.

The medium-term safety objectives are that the numbers of persons killed and seriously injured (as a result of a road accident) should be continuously reduced. Special attention should be paid to the safety of physically challenged people and children.

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II. LITERATURE REVIEW

The method according to the invention can thus be used for distributing information, for example travel information, and entertainment programs, including advertising, as well as for billing the traveled distance.[2] Traffic jams, particularly in urban and suburban environments often arise due to differences in speeds for vehicles traveling between given sections of a roadway. In particular, when traffic is not controlled on a predetermined roadway, vehicles will often travel at the legal speed limit, only to be forced to stop at traffic control signals controlling intersections. The constant acceleration and stopping, the time taken to reach cruising speed, and the unevenness o f traffic flow greatly decreases the average speed not only of the first vehicles to reach traffic lights, but also of subsequent vehicles as traffic backs up behind them.

It is an object of the present invention to provide a traffic control system in which the speed of individual

vehicles is controlled in such a manner that the speed between intersections controlled by traffic lights is arranged so that vehicles reaching the traffic light will always have a green light.

In contrast to the well-known system of staggered or progressive lights for one way streets, the present system contemplates control of individual vehicles or of one or two vehicles at a time, only, traveling within a given lane of traffic and control of their speed between traffic lights of intersections. The present invention permits adjustment of the speed between such sections, depending upon the length of cycling of the traffic lights and the length of the sections, so that the proper average speed, if maintained by the vehicle, will always permit the vehicle to reach an intersection traffic light on a green signal.[3] Public transit buses must generally follow a pre-determined schedule. The schedule is published and is relied upon by the riding public to gain access to the mass transit system. The transit company creates the schedule, which includes locations, routes, and times of arrival. At intersections, signal light controllers provide traffic control that allows the orderly progression of vehicles through the intersection.

III. WORKING IMPLEMENTATION

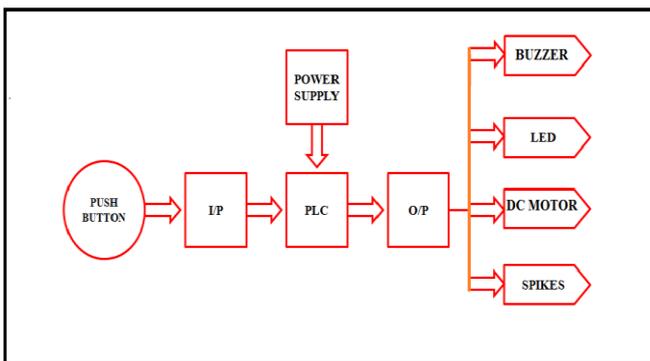### A. Block Diagram of System:

Fig. 1: Block Diagram of Electromechanical traffic management and public transport system

The First Push Button Is The External Power Supply. We Can Use Different Input Like Toggle Switches Or Push Buttons For The Main Power Supply. In This Project We Are Using Five Switches And Five Toggle Switches.

As Shown In The Above Block Diagram Fig. 1 It Describes The Input And Output Of PLC. And Working Of The PLC Module. Plc. Get the Input Through Push Button And If There Are Different Push Button Are Use For Different Purposes The First Push Button Is For The Main Power Supply Which Is Given To The External Power Supply.

PLC wills Process the inputs as per the programming done in WPLSoft software. At the output side we have DC Motors for the Spikes, LEDs and Buzzers connected. As per our project we have 24V DC LED which will provide current status of the traffic signal same signal will be displayed at the distance of 300 meter from the cross road to make the people aware about current traffic signal status.

Spikes will be placed at the Zebra crossing which will go upward When the Yellow signal will Start Blinking and when the Red lights blinks Spikes will be completely

outside at 90 degree and they will go down when the red signal will turn off. We will also provide Push button at the four side of the zebra crossing for the physically challenged people when any blind person press the push button timer buzzer will produce beep sound if previous signal is close. The DC motor is used here to rotate spikes in upward and downward direction.

IV. SOFTWARE DESCRIPTION
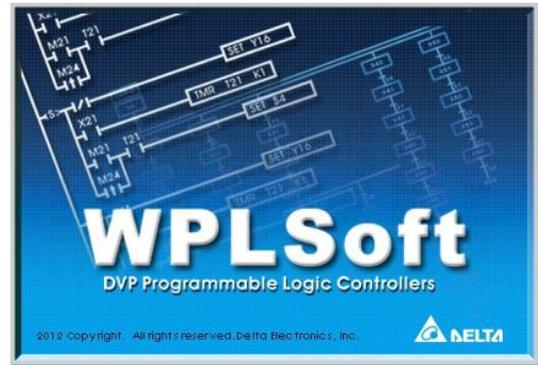
A. Programming Software:

Fig. 2: Software Logo

WPLSoft is program-editing software made for the Delta DVP-PLC series used under WINDOWS. Except for general program planning and other general functions (e.g. cut paste, copy, multi-windows, etc.) of WINDOWS, WPLSoft, in addition, has provided various Chinese/English commentary-editing and other special functions (e.g. survey and edit the listed register, the setup, the data readout, the file saving, and monitor and set up diagrams of various contacts, etc.). What follows is the system requirement to comply with the operation environment of WPLSoft.

| Item	System Requirement
Operation system	Windows 95/98/2000/NT/ME
CPU	Pentium 90 or above
Memory	16MB or above (32MB or above is recommended)
Hard drive	Capacity: at least 50MB or above CD-ROM (to install WPLSoft)
Monitor	Resolution: 640×480, 16 colors or above
Mouse	Mouse of general use or the device compatible with Windows
Printer	With the driver program of Windows installed
RS-232 port	At least one of the ports among COM1 ~ COM4 should be connected with PLC
Compatible PLC model	The Delta DVP-PLC Series

Fig. 3: System Requirement for the WPLSoft Software
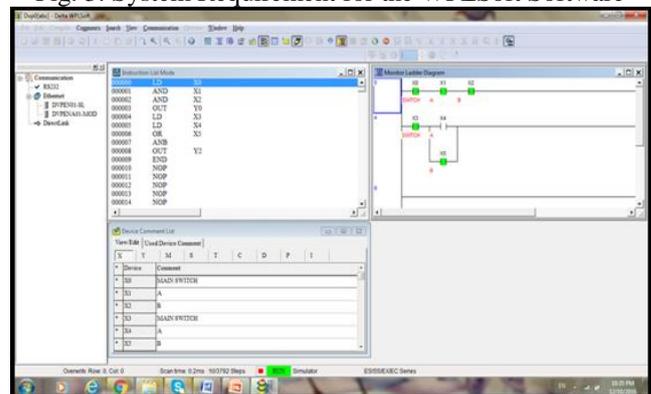
Fig. 4: Main screen of WPLSoft software.

Fig.4 will shows the main screen of the WPLsoft. It shows ladder diagram, instruction list and device comment list. By using shrotcut and tool bar we can write program in WPLSoft.
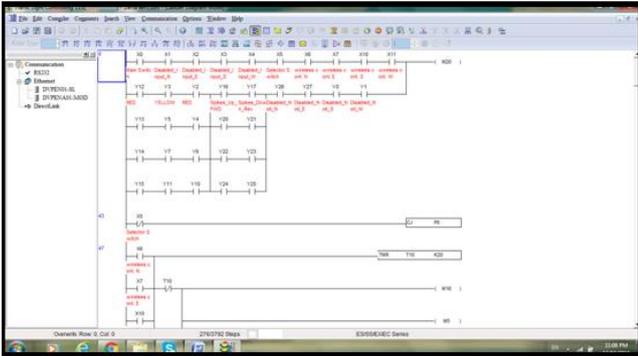
B. Working Snapshots:

Fig. 5: all input and output of the system to monitor entire process easily.

In above fig.5 all inputs and outputs are shown together to moniter enitire program easily. Switch is used here to manage emergency. Traffic police or the person available at the cross road can easily manage any emergecy. At the input side main switch and Push button are labled as X0-X11. And output are labeled as Y0-Y26.
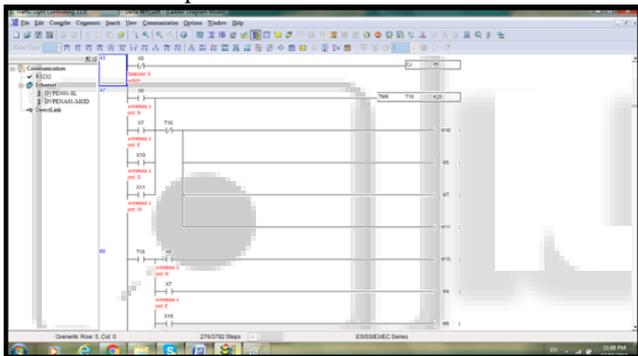

Fig. 6: Input from the physically challenged person at the zebra crossing.

Above programming snapshot Fig.6 is shows input signal applied through the blind person or physically challenged person.It will block the signal if the previous signal is on or green. If previous signal is red or off it will allow to the person to cross road and buzzer will produce signal.
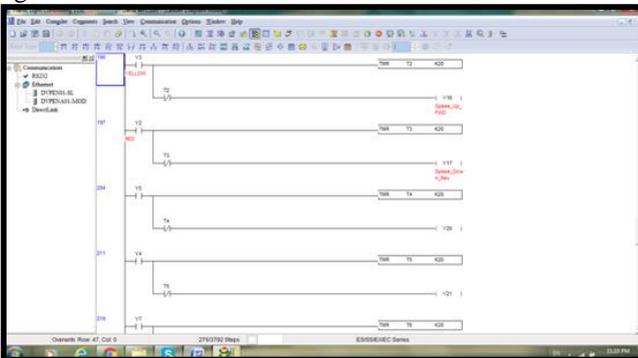

Fig. 7: Spikes up-down process

This step is relaed to spikes up-down process. Fig.7 is Shows that yellow Signal.is going to stop within 2 seconds. And after that 2 seconds red signal will start or turn to green and spikes will come up.

V. ADVANTAGES AND APPLICATIONS & FUTURE SCOPE

A. Advantage:

It will force the people to follow the traffic rules of the traffic and safety.
Less accident occurs during driving.
Better traffic management through the spikes at the zebra crossing.
Lives of People will be saved and over speeding of the vehicle will be reduced.
Traffic rules will be not broken easily and road will become less congested by better management of traffic.
Safety of Human on road will be increased. It is very useful for the physically challenged People to cross road.
It will provide better information of the bus location.
It will make Easy and reliable use of public transport system.

B. Application:

The Project will apply or be used on the crossroads.
The project (device) will stop or reduced the amount of accidents near or on the crossroads.
It will be used to control and locate the bus for easy and convenient transport.

1) Future Scope:

By using pressure plates we can measure traffic density on the road.
We can also use pressure plate at bump and we can create energy to maintain bus stop

VI. CONCLUSION

By using this system easy to maintain traffic and working of traffic police become easy. And this system is used for smart city. The accident is reduced which is accrue due to heavy speed.

VII. ABRIVATION

PLC- Programmable Logic Control
SCADA-Supervisory control and data acquisition

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