Asian Journal of Applied Science and Technology (AJAST)
(Open Access Quarterly International Journal) Volume 2, Issue 1, Pages 339-344, 2018

# Time Sharing Based $CO_2$ Emission Control and Ambulance Clearance

A.Prasannah Rajasingh[1], R.Amsaveni[2], M.Jeyanthi[3], M.Lalitha Parameswari[4], M.Matheshwari[5]

[1]*Assistant Professor, Department of Electronics and Communication Engineering, Sasurie Academy of Engineering, Coimbatore, India.*
[2.3.4.5]*Department of Electronics and Communication Engineering, Sasurie Academy of Engineering, Coimbatore, India.*
*Email: [1]a.prasannah@gmail.com, [2]amsarajamanickam@gmail.com , [3]jeythi1996@gmail.com, [4]laluselvi12345@gmail.com, [5]mowthuselvi10@gmail.com*

*Article Received: 27 November 2017* *Article Accepted: 24 January 2018* *Article Published: 30 March 2018*

ABSTRACT

Due to the heavy traffic in the road many people are suffering. Even though there is traffic signal available at various places it is not easy to control the crowd. In order to avoid traffic problem heavily on the road, we designed and developed a system so called as traffic controller with ambulance and time sharing depends upon the vehicle also involved in this concept.

Keywords: Vehicle unit, traffic unit, speed sensor, Zigbee, PIC microcontroller.

## 1. INTRODUCTION

Nowadays the road accidents in modern urban areas are increased to uncertain level. The loss of human life due to accident is to be avoided. Traffic congestion and tidal flow are major facts that cause delay to ambulance [1]. To bar loss of human life due to accidents we introduce a scheme called ITLS (Intelligent Traffic Light system). The main theme behind this scheme is to provide a smooth flow for the emergency vehicles like ambulance to reach the hospitals in time and thus minimizing the delay caused by traffic congestion. The idea behind this scheme is to implement ITLS which would control mechanically the traffic lights in the path of the ambulance. The ambulance is controlled by the control unit which furnishes adequate route to the ambulance and also controls the traffic light according to the ambulance location and thus reaching the hospital safety [1].

## 2. DESCRIPTION

This system consists of two units. One is vehicle unit and other is traffic light and control unit. Vehicle unit consists of speed sensor, LCD display, vehicle detector circuit and driver circuit. When vehicle enters into the nearest of traffic signal for detects vehicle and inform the signal status with time remaining of signal in traffic light. This information is sent through Zigbee [2]. The traffic controller unit controls the traffic signal automatically, which road side led to be glow and the order of road to be give a signal, these are all programmed and embedded into on chip. Controller delivers the corresponding signal to LED driver circuits. The LED driver circuit enables the LED to display for particular time depends on road.

When this type of system is followed, we are sure that we can control the traffic to certain extent to certain extent. The traffic side system it will operate depends on the vehicles movement in each lane. If any one lane side all vehicle can pass within the particular time, than the balance time in that lane will share in other lane side. Example the 1st lane side vehicles will pass with time reduces, the infrared sensor will identify the vehicles movement or not on that lane side. If the all vehicles can passes before the time finish the balance time will share into next lane side.

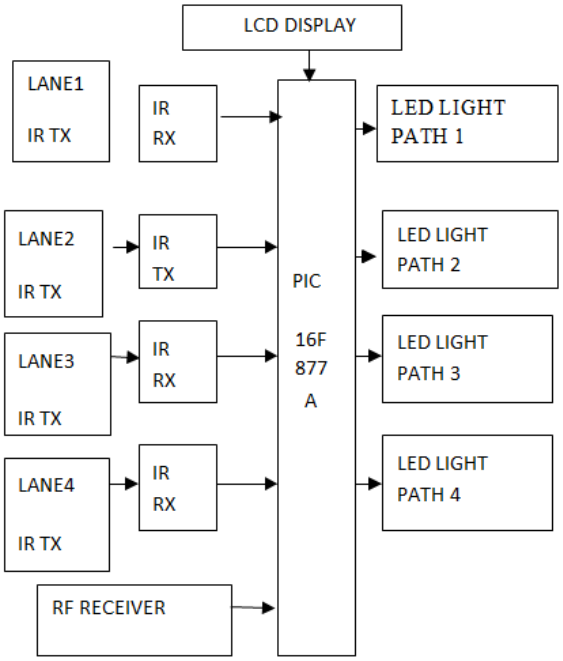


Fig 1. Block diagram for traffic signal side

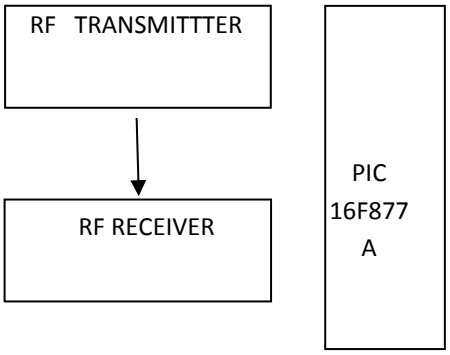


Fig .2. Block diagram for ambulance side

We can implement this concept to reduce traffic problem. Whenever the vehicle speed is over means the vehicle speed sensor detect the vehicle speed. In case vehicle speed is over means GSM modem will sent the information to RTO office and vehicle owner will be punished (or) put penalty. Mode key is vehicle select key. For an ambulance mode (or) normal vehicle mode [2]. For any emergency situation vehicle will select ambulance mode otherwise select normal vehicle mode. Whenever the ambulance is getting into any side of the road in traffic signal, the Zig-Bee transmitter placed in the ambulance will transmit the signal is detected by the Zig-Bee Receiver placed in the road sides. Depends on the detected side, the other three sides of the traffic is blocked and at the same time the last traffic signal conditions are stored in micro controller. When ambulance leaves the traffic signal the controller gets into the last status of the traffic signal at the time of ambulance arrived.

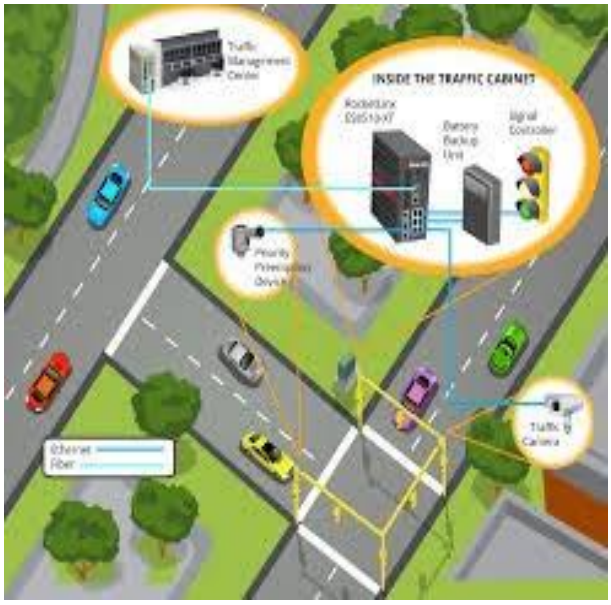


Fig.3. Time sharing based traffic control

## 3.ELEMENTS USED

### *3.1 INFRARED SENSORS*

There are two types of infrared (IR) detectors; these are the active and passive type detectors. Active infrared sensors operate by transmitting energy from either a light emitting diode (LED) or a laser diode. A passive infrared system detects energy emitted by objects in the field of view and may use signal- processing algorithms to extract the desired information. All objects emit some form of energy, which is in the form of heat or thermal radiation, this radiation most often falls in the infrared spectrum. This radiation cannot be seen by the naked eye, but can be detected by an infrared sensor that accepts and interprets it. In some infrared sensor like motion detectors, radiation enters the front and reaches the sensor itself at the centre of the device. This can be a system consisting of one or more individual sensors, each one being made from pyroelectric materials, these materials mat be natural or manmade. These are materials that generate an electrical voltage when heated or cooled. An experimental infrared optical system has been designed to detect and monitor vehicular road traffic.

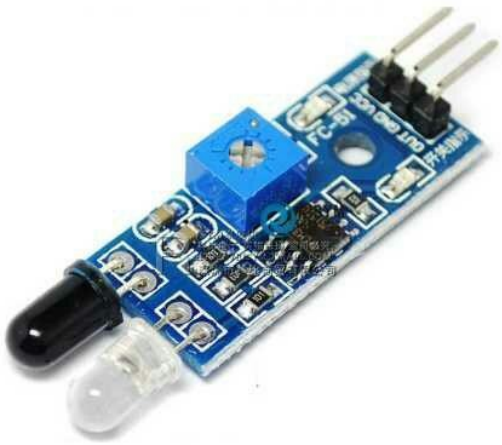

Fig.4. Infrared Sensor

The principle of an infrared vehicle sensor is: the thermopile element is used as a sensor which detects the temperature of the object situated within a sensing area. This element generates thermo- electromotive force which is dependent on temperature.

The setup of sensor pair across road in our system uses 802.15.4 radios which have a spread propagation model, instead of ray propagation model of infrared. This makes our technique robust to noise and thus suitable for disorderly road conditions.

### *3.2 RFID READER*

Radio-frequency identification (RFID) is the wireless non-contact use of radio-frequency electromagnetic fields to transfer data, for the purposes of automatically identifying and tracking tags attached to objects. The tags contain electronically stored information. Some tags are powered by and read at short ranges (a few meters) via magnetic fields (electromagnetic induction).

Others use a local power source such as a battery, or else have no battery but collect energy from the interrogating EM field, and then act as a passive transponder to emit microwaves or UHF radio waves (i.e., electromagnetic radiation at high frequencies). Battery powered tags may operate at hundreds of meters. Unlike a bar code, the tag does not necessarily need to be within line of sight of the reader, and may be embedded in the tracked object. RFID tags are used in many industries. An RFID tag attached to an automobile during production can be used to track its progress through the assembly line. Pharmaceuticals can be tracked through warehouses. Livestock and pets may have tags injected, allowing positive identification of the animal. On off-shore oil and gas platforms, for example, RFID tags are worn by personnel as a safety measure, allowing them to be located 24 hours a day and to be quickly found in emergencies.


Fig.4. Infrared Sensor

Since RFID tags can be attached to cash, clothing, everyday possessions, or even implanted within people, the possibility of reading personally-linked information without consent has raised serious privacy concerns.

### *3.3 POWER SUPPLY*

The operation of power supply circuits, built using filters, rectifiers, and then voltage regulators. Starting with an ac voltage, a steady dc voltage is obtained by rectifying the ac voltage, then filtering to a dc level, and finally regulating to obtained a desired fixed dc voltage. The regulation is usually obtained from an dc voltage regulator

unit, which takes a dc voltage and provides a somewhat lower dc voltage, which remains the same even if the input dc voltage varies, or the output low connected to the dc voltage changes. A block diagram containing the parts of a typical power supply and the voltage at various points in the unit. The ac voltage, typically 120 V rms, is connected to a transformer, which steps that ac voltage down to the level for the desired dc output. A diode rectifier then provides a full-wave rectified voltage that is initially filtered by a simple capacitor filter to produce a dc voltage. This resulting dc voltage usually has some ripple or ac voltage variation. A regulator circuit can use this dc input to provide a dc voltage that not only has much less ripple voltage but also remains the same dc value even if the input dc voltage varies somewhat, or the load connected to the output dc voltage changes. This voltage regulation is usually obtained using one of a number of popular voltage regulator IC units.

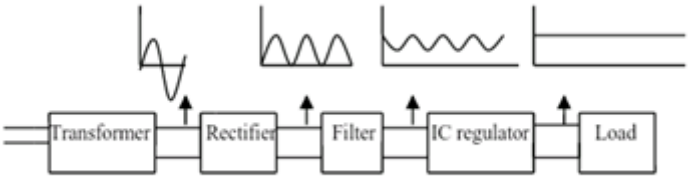


Fig.6. Power supply diagram

## 4. CONCLUSION

This system will definitely help to traffic police to give the way to the ambulance when there is heavy traffic on the road [REF: 1]. The design and implementation of this technique is directly targeted for traffic management so that emergency vehicle on road gets clear way to reach their destination in less time and without any human interruption [3].

Fig.7. Time sharing based CO2 emission control and ambulance clearance

**REFERENCES**

[1] 'Automatic accident detection and ambulance rescue with intelligent traffic light system'- Ganadipathy tulis's Jain engineering college. VOL 2, ISSUE APRIL 2013.

[2] 'Density based traffic signal system'- Velammal College of engineering and technology.

[3] 'Automatic lane clearance system for emergency vehicles" -J.S.P.M's, J.S.C.O.E, Hadapsar, Pune, International Journal of Innovative Research In Science, Engineering And Technology.

[4] 'An open traffic light control model for reducing vehicles CO2 emissions based on ETC vehicles'.