

# INTEGRATION OF VEHICLE MOVEMENT WITH TRAFFIC CONTROL SYSTEM

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**Abstract:** One of the frequent and unsolved problem today is that people are not stopping in the traffic when red light is shown in the signal. People are not following the rules and regulations implemented by the government. People are crossing the line and not stopping within the line marked on the road. Even though people are knowing that the red signal is going to come, they are speeding the vehicle in order to avoid the delay in the traffic which may result in collision with the vehicles coming from the other direction which ultimately results in accident. This project gives the solution to this problem by imparting a receiver (sensor) within the vehicle which works in tandem with the transmitter fixed with the signal system. When the driver is approaching the stopping lane on the road and when the signal is red, the sensor receives the input and the power going to the spark plug is cut so that the engine is switched off.

**Key Words:** Transmitter, Ignition system, Receiver, Engine, Signal

## 1. INTRODUCTION:

A traffic control system is a control system which consists of a transmitter fixed with the signal and a receiver which is fixed on the bike. In a traffic, when the red signal has fallen, the vehicles must halt and wait for the green signal to get moving. This control system transmits a signal when the signal is red, to the nearby vehicle housing the receiver. The vehicle which crosses the stopping line on the road will come within the range of the receiver so that it receives the signal from the transmitter. Once the signal is received, the control circuit of the receiver cuts the power going to the spark plug. Once the power going to the spark plug is cut, the engine is switched off. Thus vehicles which cross the stopping line will get their engine switched off by this traffic control system.

## 2. MATERIALS:

S.No	Material	Quantity
1.	Iron pipe	1 (8ft)
2.	Base plate	1
3.	LED (Red, Amber, Green)	6 bulbs each color
4.	Transmitter	1
5.	Receiver	1
6.	Wire	5 m
7.	Switches	4 nos

Table 1.1

## 3. METHOD:

The transmitter gets energized once the traffic signal is red and it transmits signal to the receiver. The receiver is mounted on the bike. When the bike crosses the stopping line on the road, it comes under the range of the transmitter. The receiver will receive the transmitted signal and the gives the input to the control circuit. The ignition circuit gets opened and hence there is no current flow in the circuit and thus the engine is switched off. To crank the engine once again, the signal must turn green so that it receives the signal from the transmitter so that the circuit is

closed. Now the engine can be cranked. This is one of the advantages of our project so that the rider will not be able to drive past the traffic even if he wishes to do so, he will be unable to crank his engine.

### 3.1. SIGNAL LAMP :



**Figure 1.** Signal lamp

The signal lamp consists of three colors namely Red, Amber (yellow) and Green. If the signal is red, it means that the vehicles have to stop. If the signal is yellow it means that the vehicles have to slow down if it is going to be red or get ready for moving if it is going to be green. The signal lamp is fabricated by using a cardboard box which acts as the housing for lights. LED lights were used for making the three colors. The LED bulbs are connected in series and given connection to a battery. A switch is used to control the lights by turning OFF/ON similar to a signal.

### 3.2. LAMP POST:

The signal lamp post is fabricated so as to serve the purpose similar to a roadside traffic light post. An eight feet rod is used to make this post by welding it on a base plate which acts as the support. The lamp post is painted yellow. Traffic lights alternate the right of way accorded to users by illuminating lamps or LEDs of standard colors (red, amber, and green) following a universal color code.



**Figure 2.** Lamp post

### 3.3. TRANSMITTER :



**Figure 3.** Transmitter

The transmitter used here is integrated with the signal lamp. The transmitter gets energized once the signal turns red. This causes to open the circuit on the receiver's end. Once again as the signal turns green, transmitter transmits the signal to the receiver, so that the circuit is now closed.

### 3.4. RECEIVER :



**Figure 4.** Receiver

The receiver used here is a device that receives radio waves and converts the information carried by them to a usable form. It is used with an antenna. The antenna intercepts radio waves (electromagnetic waves) and converts them to tiny alternating currents which are applied to the receiver, and the receiver extracts the desired information. The receiver uses electronic filters to separate the desired radio frequency signal from all the other signals picked up by the antenna, an electronic amplifier to increase the power of the signal for further processing, and finally recovers the desired information through demodulation. The signal strength of radio waves decreases the farther they travel from the transmitter, so a radio station can only be received within a limited range of its transmitter.

### 3.5. BIKE:



**Figure 1.5:** Bike

The bike used for our project is a Honda Shine. It is a 125cc motorcycle. It has a battery ignition system. In this bike, the receiver is connected near the ignition switch of the bike so as to integrate it with the ignition system of the bike.

#### 4. DISCUSSION:

This project can be implemented in real life so that people will follow the traffic rules. The presented work was aimed at people not obeying the traffic rules and make them obey by standing before the stopping line on the road when the signal is red. The components used for integrating the traffic signal with the motorcycle's ignition were of low cost. So this project when applied practically will be economically feasible. This project can make the people obey the traffic rules and it will help in preventing accidents on the road. We know that in a year a lot of accidents take place due to people's misunderstanding while crossing the road or the carelessness of the driver. We hope that this project would help in maintaining the road manner and peace while driving.

#### 4.1. FUTURE SCOPE :

There is a lot of scope for bringing innovations that already exist in other parts of the traffic control systems. In our project we have demonstrated the integration of single vehicle with single traffic control system. The transmitter and receiver thus can be universally programmed in order to serve the purpose for all vehicles and all traffic control systems. In our project also we can improve the integration of vehicle movement for vehicles which can turn free left. These vehicles need not to stop during the signal. So prevent their engine getting turned off, we can slightly modify the circuit; connect a switch to the indicator. So the vehicles free turning can turn on the indicator so that the switch gets closed and the circuit also remains closed. Thus the engine will keep running.

#### 5. CONCLUSION:

This traffic control system when successfully implemented has the ability to become a revolution in the roadways and there may be a drastic reduction of accidents taking place. Also this would help in maintaining the traffic rules and eliminates unwanted congestion in the road junction. It will help in maintaining the road manners and peaceful driving on the road.

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