

# Fabrication and Testing of Virtual Speed Breaker

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**Abstract:**-*The concept of this research work is to have an automatic speed breaker on time demand according to the requirements. Means when there is no need of the speed breaker on the road, it disappears from the road and the road becomes flat and when there is a need then the breaker comes on the road from ground and it starts its working of slowing speed of the vehicles. As domestic breaker are stiff breakers they don't allow such flexibility to drivers.*

**Keywords-** *road accidents; traffic calming measures; speed breakers; discomfort.*

## I.INTRODUCTION

The roads of different categories are designed for certain design speeds, which the vehicles are required to maintain proper functioning of the roadway system. To ensure that the required speeds are maintained, it is practice to provide certain control measures. These measures can ensure improved traffic movement with better safety and convenience.

Traffic scenario has changed drastically over the past decade. An increase in the number of vehicles has led to increase in the number of the accidents. Scenario of traffic safety is worsening day by day in our country which requires proper attention. Accident data reveals that more than 1.5 lakh people die in road accidents every year which is significantly high as compared to other developed countries.

Analysis of various accidents shows that the main causes of accident are inappropriate speed, lack of road safety awareness, driving under the influence of alcohol and narcotics and violation of traffic rules. To reduce the frequency as well as the severity of accidents various traffic calming measures are used. The most commonly used traffic calming measures are:-

1. Police Enforcement
2. Visual Stimuli (Traffic signs and signals)
3. Tactile Stimuli (Audible and Vibratory attention seeking devices)

There can be various definition of traffic calming measures but the main aim of a traffic calming measure is to reduce the speed and provide a safe environment for non-motorized and motorized traffic.

“Traffic calming is a set of engineering measures to reduce speeds and volumes of motor vehicles in local area and thereby increasing road safety.”<sup>[1]</sup>

The traffic signs and other visual traffic control devices especially the speed control signs are generally found to be less effective when used alone.<sup>[2]</sup> However their performance can be significantly improved when used in

combination with physical traffic calming measures like speed breakers.

### III.COMPONENTS

1. Speed sensors (PIR)
2. Micro-controller
3. Pipes (PVC)
4. Compressor
5. Piston cylinder arrangement
6. Checker plate
7. Solenoid valve

#### 1.Speed sensors (PIR)



A PIR- based motion detector is used to sense movement of people, animals, or other objects. They are commonly used in burglar alarms and automatically-activated lighting systems. They are commonly An individual PIR sensor detects changes in the amount of infrared radiation impinging upon it, which varies depending on the temperature and surface characteristics of the objects in front of the sensor. When an object, such as a human, passes in front of the background, such as a wall, the temperature at that point in the sensor's field of view will rise

from room temperature to body temperature, and then back again. The sensor converts the resulting change in the incoming infrared radiation into a change in the output voltage, and this triggers the detection.

#### Micro-controller:

The 8051 Micro-controller was designed in 1980's by Intel. Its foundation was on Harvard Architecture and was developed principally for bringing into play in Embedded Systems. At first it was created by means of NMOS technology but as NMOS technology needs more power to function therefore Intel re-intended Micro-controller8051 employing CMOS technology and a new edition came into existence with a letter 'C' in the title name,

#### PIPES:

The use of PVC pipe is common for use with compressed air. They are Economical, versatile polyvinyl chloride (PVC).About three-quarters of all vinyl produced goes into long-lasting building and construction applications.they are easy to install, strong and durable , when they eventually reach the end of their service life, they can be recycled back into new PVC pipes.

#### Compressor

An air compressor is a device that converts power (using an electric motor, diesel or gasoline engine, etc.) into potential energy stored in

pressurized air . By one of several methods, an air compressor forces more and more air into a storage tank, increasing the pressure. When tank pressure reaches its engineered upper limit the air compressor shuts off. The compressed air, then, is held in the tank until called into use

### WORKING

The components required for working of fabrication and testing of virtual speed breakers consists of two pir sensor ie.( passive infrared sensor) , checkers plate, two pneumatic cylinder , pvc pipes(Polyvinyl chloride) , solenoid valve and one angles to adjust the plate on it .

The working of this project starts from the movement of the vehicle the two pir sensor are fixed in the ground having particular distance between them . this pir sensor emits the lights/ray which is invisible to us .this sensor the movements of any physical changes on its so .when the vehicle is passed from this PIR sensor then sensor the movements of the vehicle and sends radiation to the micro-controller which then further carrier the process/operation. .the work of PIR sensor is to give time required for further process operation.

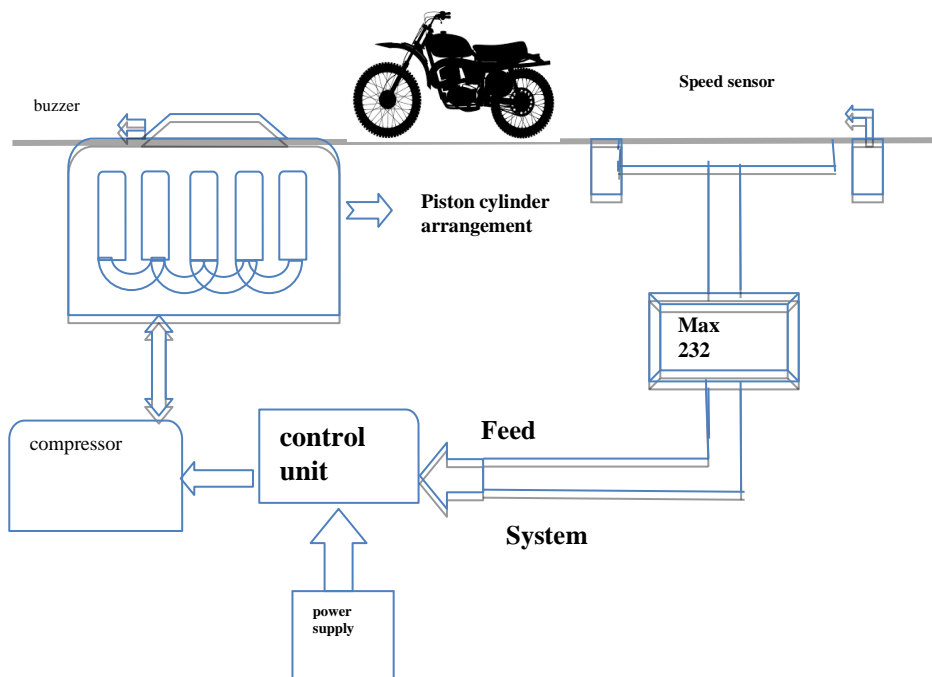


Fig: schematics representation of automatic breaker system

The automatic speed breakers system mainly work on the time and pneumatic cylinder mechanism. In this system when the rush

increases in the area as regular time breaker installed at calculated location. It will go down when the regular time of rush passed over.

We used pneumatic system to make the breaker up. Pneumatic system is based on time control system and solenoid valve. For creating the air pressure we used air compressor tank. For controlling solenoid valve we used embedded system.

All above process is based on our time required.

#### IV. CONCLUSION

The current literature review studies the literature available on time embedded breaker system. Conclusion to these research work shows that realistic and practical life like research work has been made which can be milestone in electronics world. The future advancement in the concept is as told before, that more channel can be given to RTC to have more time slots to be work for.

The cops will be more powerful and smart with the help of such ideas and concepts. As well as number of accidents can be reduced by implementation of such type of system. As the concept is so smart, the complexity can be considered easy in smartness of idea.

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