SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35.

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DEPARTMENT OF AUTOMOBILE ENGINEERING

COURSE NAME : 19MCE402 – AUTOTRONICS

IV YEAR / VII SEMESTER

Unit 1-Adaptive Lighting System

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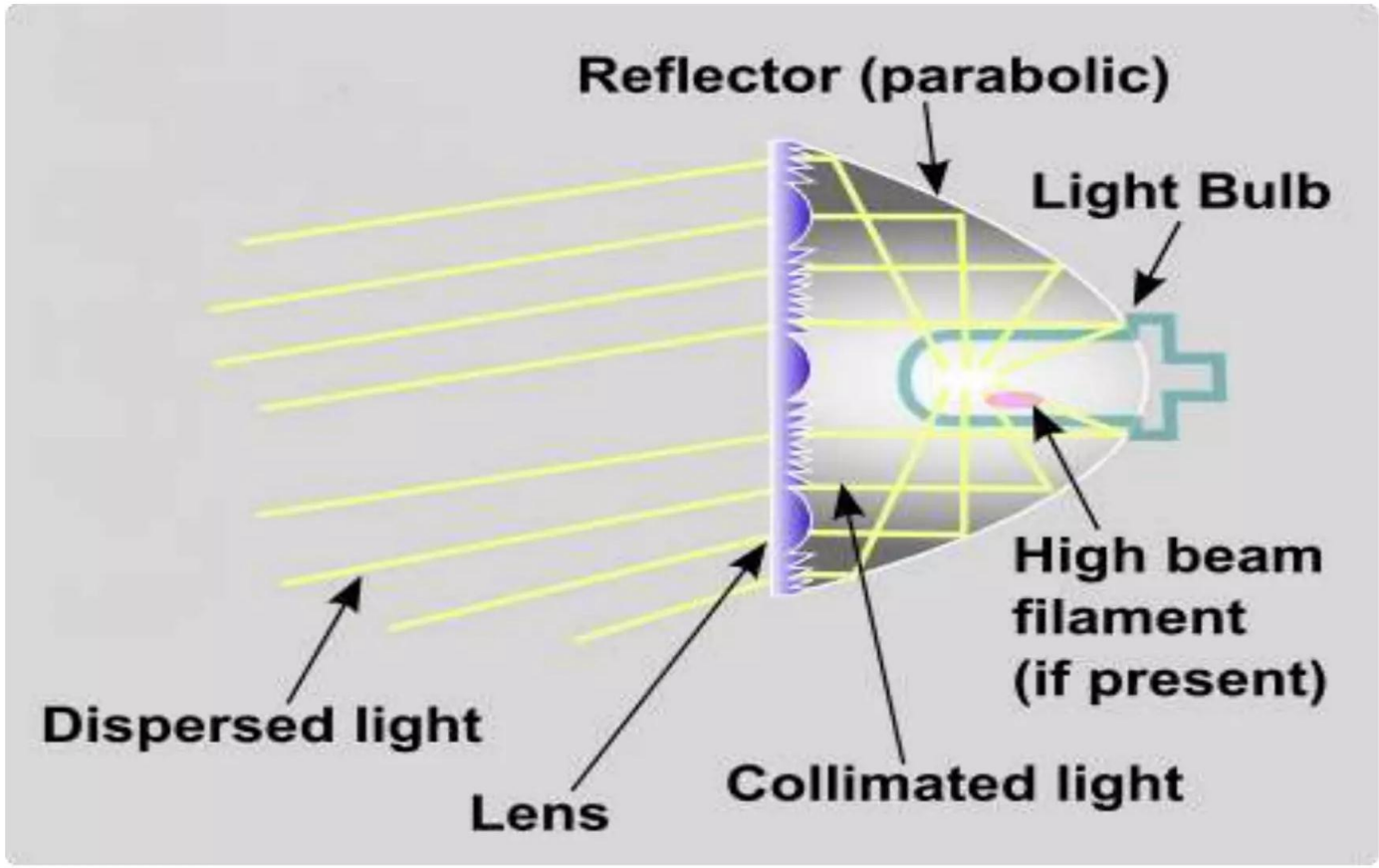
INTRODUCTION

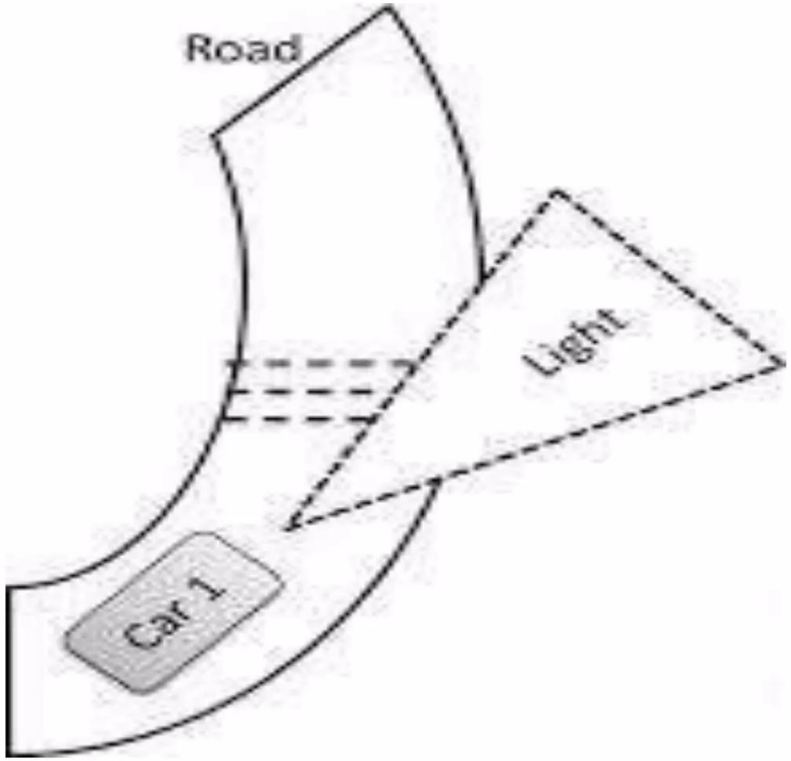
- Now a days the use of vehicles are the part of life
- Vehicle reduces the distance and saves time of busy human life, still it has great drawback that is inevitable
- Road mishaps occurs due to carelessness, condition of roads, technological fault etc.
- In 2014 around 4.8 lakh road accident occurred in which 4.5lakh people get injured and 1.4 lakh people die every year due to road accident in India
- Compared to day time risk of accident is three times at night time

CONVENTIONAL HEADLIGHT



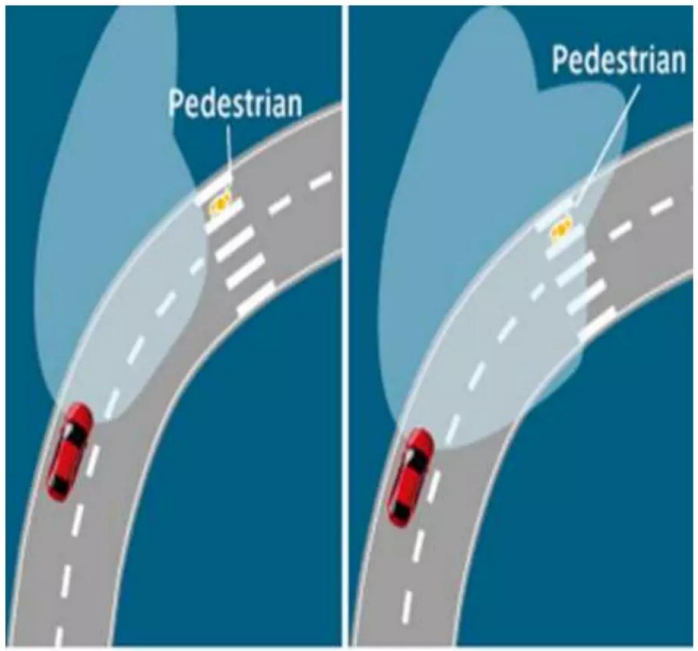
NEED OF ADAPTIVE LIGHTENING SYSTEM

- Conventional front lightning system is static
- low beam or high beam
- Illumination at corner is not possible while taking a curve

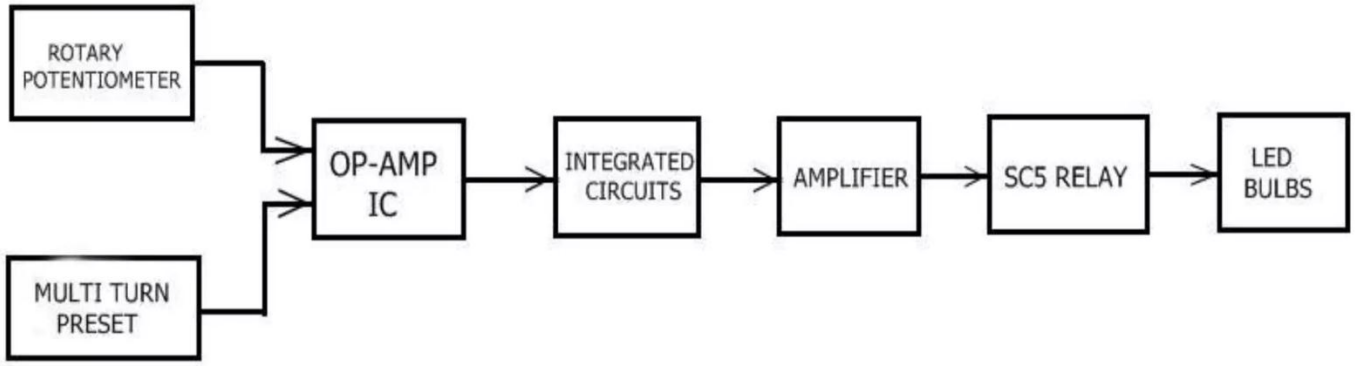


NEED OF ADAPTIVE LIGHTENING SYSTEM(Cont…)

- AFS control headlight during vehicle's turning from driver's point of view
- AFS consist of real time sensor mounted on steering shaft
- Improves visibility
- With better illumination, stress and fatigue of driver reduces

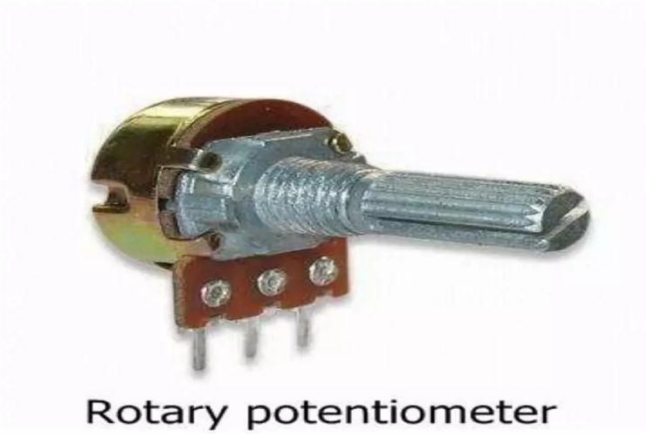


DEVELOPED SYSTEM ARCHITECTURE

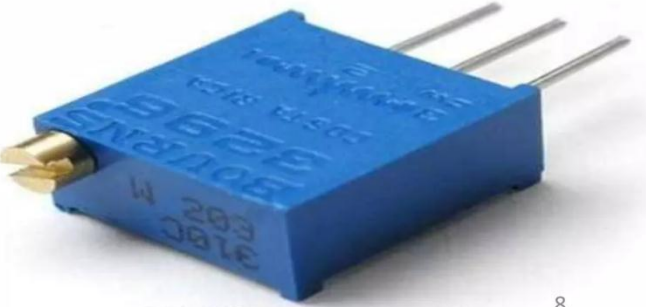


WORKING

- Output from rotary potentiometer and multi turn preset is supplied to logic IC
- Multi turn preset is used to set benchmark
- Logic IC used as comparator and works only if incoming value is more than or equal to benchmark value
- Signal from logic IC is amplified using transistor
- Output from transistor is fed to a 12V DC relay through diodes
- Output from relay to LED

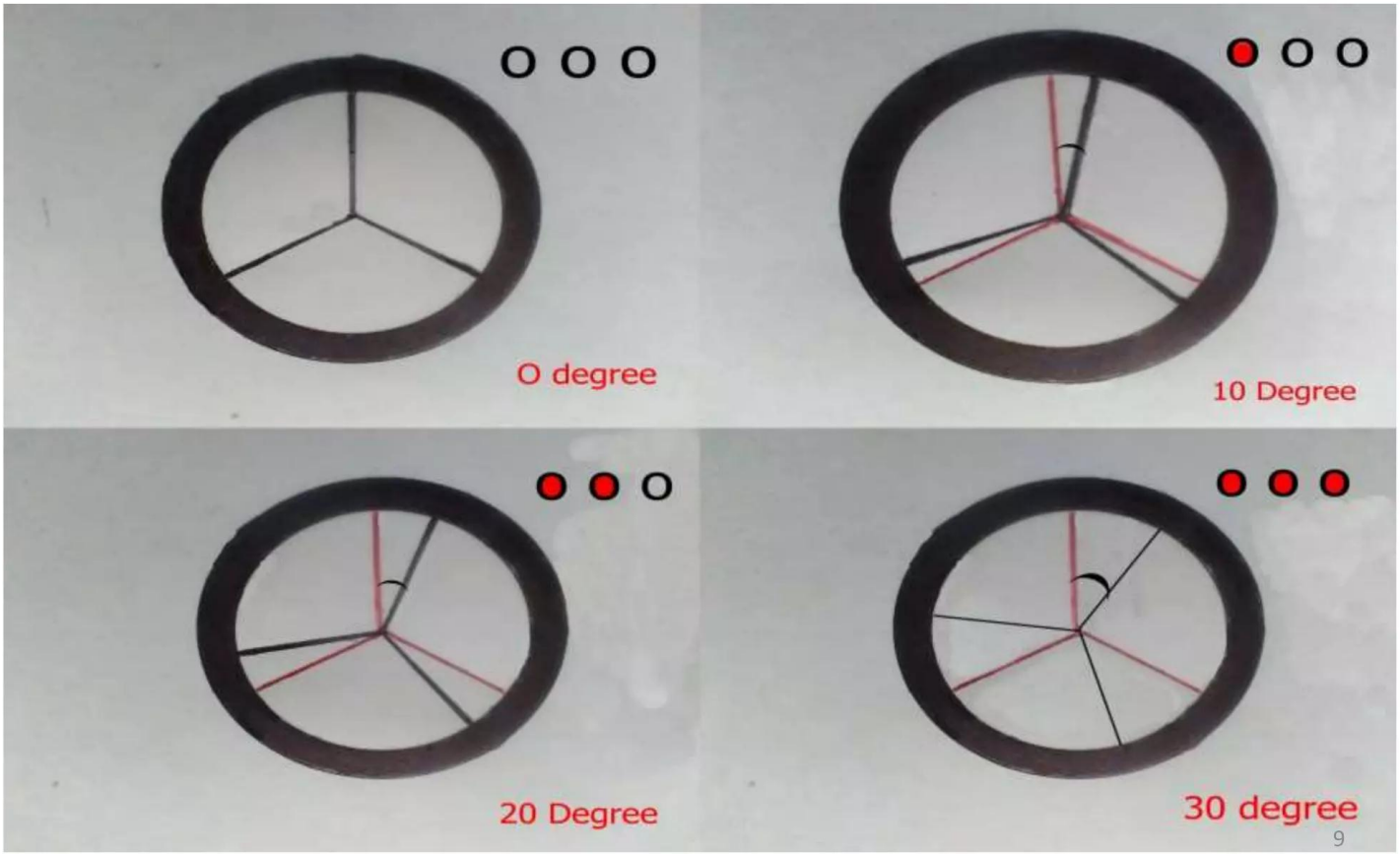


Rotary potentiometer



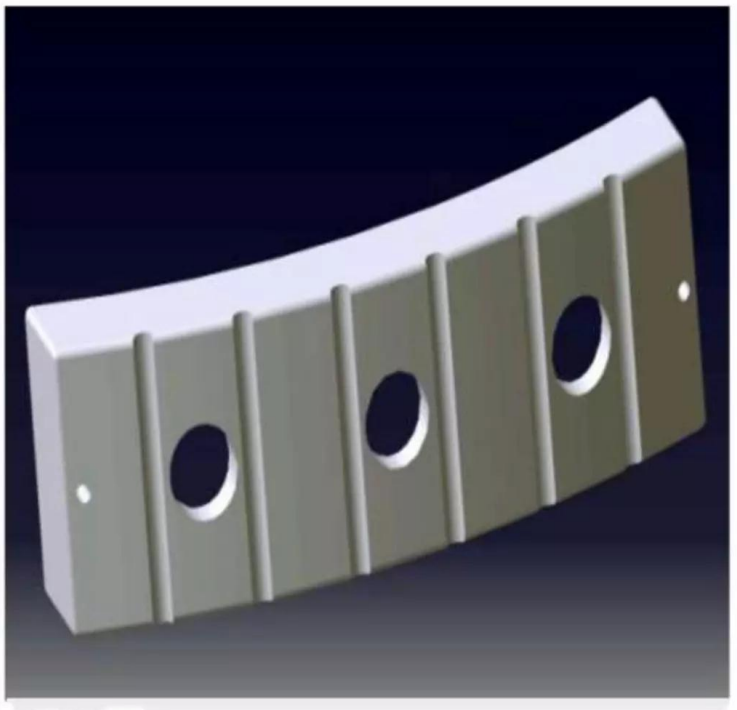
Multiturn preset

WORKING(Cont…)



FUTURE DEVELOPMENT

- Common rubber based platform for holding LED can be developed
- Microcontroller chip can be used to compact the design
- Dedicated steering angle sensor can used instead of potentiometer



Base material under development to hold LED

ADVANTAGES

- Cost effective solution for the problem of accidents occurring night time
- It can be easily mounted on cars
- Enhances existing functionality of the headlight system
- Increases visibility of the driver at curves
- Increased safety for drivers and pedestrians

DISADVANTAGES

- Continuous power supply for sensor circuit
- Dislocation of LED may happen due to vibration
- Use of potentiometer as angle sensor is not reliable due to its error causing tendency with time
- Present prototype is needs to be modified to make it compatible with all power steering based vehicles

CONCLUSION

- AFS serves as a reliable and efficient system for efficient driving at sharp turn
- System is inexpensive, simple and dependable assembly
- Simple comparator based circuit is used ,which uses very simple logic and makes it most economical to use
- AFS ensures degree of safety in vehicle and assistance to driver

Thank You !