

SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

An Autonomous Institution

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A' Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE NAME : 19OE120 AUTOMOTIVE ELECTRONICS

III YEAR /IV SEMESTER MECHATRONICS

Unit 1 – INTRODUCTION TO ECU

Topic 4 : Fuel Economy





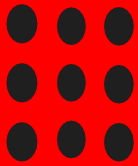
How do we measure Fuel Economy?

- Fuel economy is calculated by the *miles per gallon (mpg)* or *kilometers per liter (km/l)* of fuel that a vehicle consumes.
- The more distance per tank of fuel, the better the fuel economy.





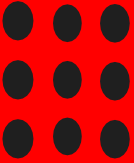
- Fuel economy refers to the efficiency with which a vehicle uses fuel to travel a certain distance. It is typically measured in miles per gallon (mpg) or liters per 100 kilometers (L/100 km).
- Higher fuel economy means the vehicle uses less fuel to travel the same distance, resulting in lower fuel costs and reduced emissions. Factors that affect fuel economy include the vehicle's weight, aerodynamics, engine size and type, transmission, tire pressure, driving habits, and road conditions.





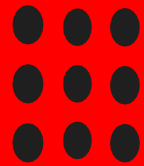
- Governments around the world have established fuel economy standards and regulations to promote more efficient vehicles and reduce greenhouse gas emissions. In the US, the Environmental Protection Agency (EPA) sets fuel economy standards and provides information on fuel efficiency through the Fuel Economy Label and fueleconomy.gov website.
- Choosing a vehicle with good fuel economy can help save money on fuel costs and reduce your environmental impact.



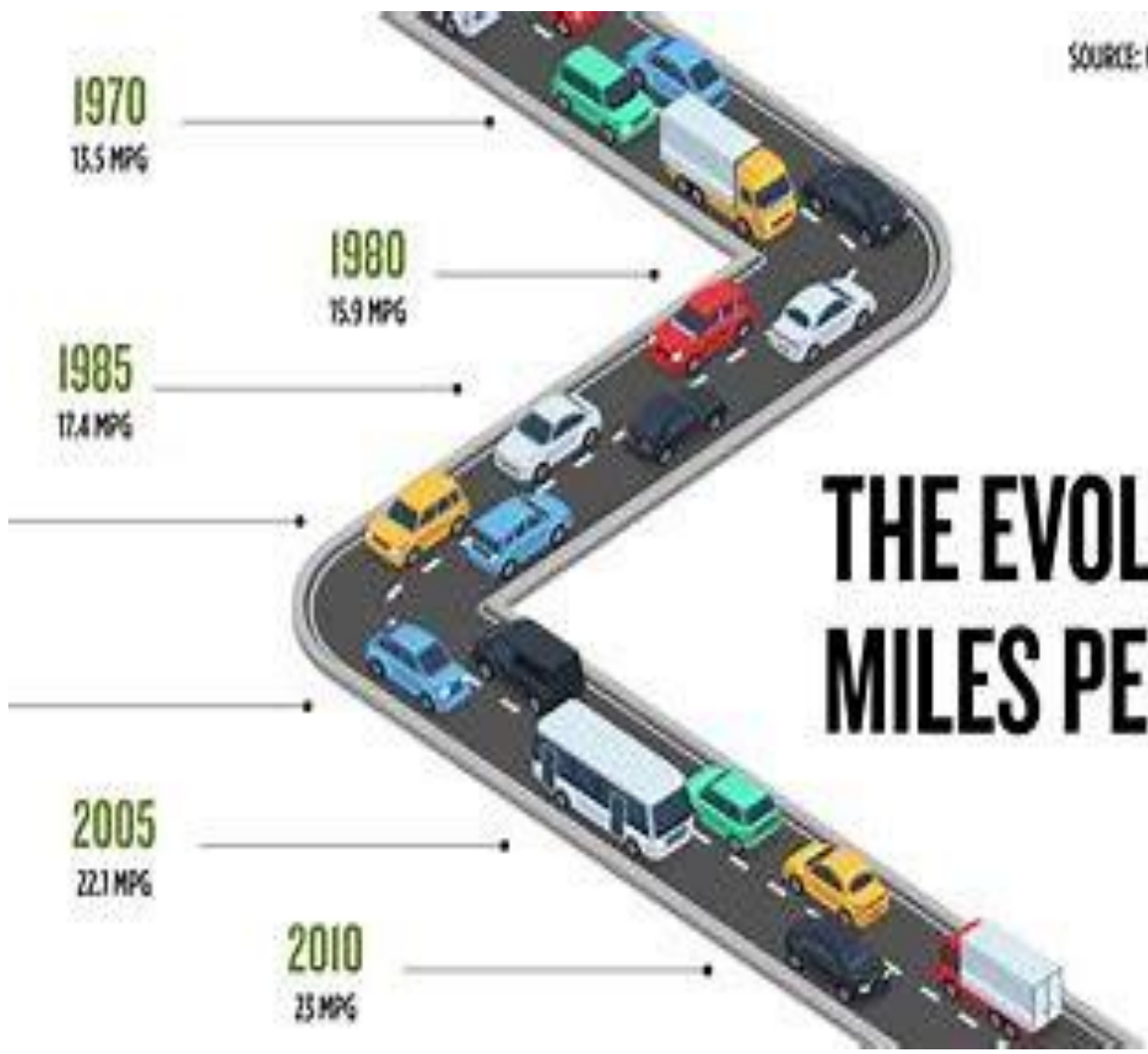


- Improving fuel economy can help reduce the environmental impact of transportation, as well as save drivers money on fuel costs. In recent years, many car manufacturers have developed new technologies and designs to improve fuel efficiency, such as hybrid and electric vehicles, start-stop systems, and advanced transmissions. Government regulations and incentives may also encourage car manufacturers and consumers to prioritize fuel economy when designing and purchasing new vehicles.



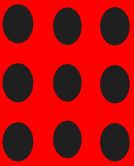


SOURCE: U.S. BUREAU OF TRANSPORTATION STATISTICS



THE EVOLUTION OF MILES PER GALLON





Why is there a difference between city mpg and highway mpg?

- City mpg are lower because you stop and start more often than on highway.
 - Vehicles consume more fuel on 1st and 2nd gear,
 - The engine has to start moving, (~ 3500 pounds)...
 - with no momentum
 - more fuel needs to be used to produce power
 - the larger the combustion, the more power it will produce
- On the highway, the vehicle is already moving at a less variable speed.
 - momentum again leads to the engine not having to produce as much torque to move the wheels.
 - Note: Torque is what make the wheels turn, **not** horsepower.



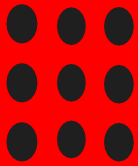


1. Check the EPA Fuel Economy Label:

- The US Environmental Protection Agency (EPA) requires new cars to display a Fuel Economy Label that provides an estimate of the vehicle's fuel efficiency.
- The label shows the estimated miles per gallon (mpg) for city, highway, and combined driving. You can usually find this label on the window of the car.

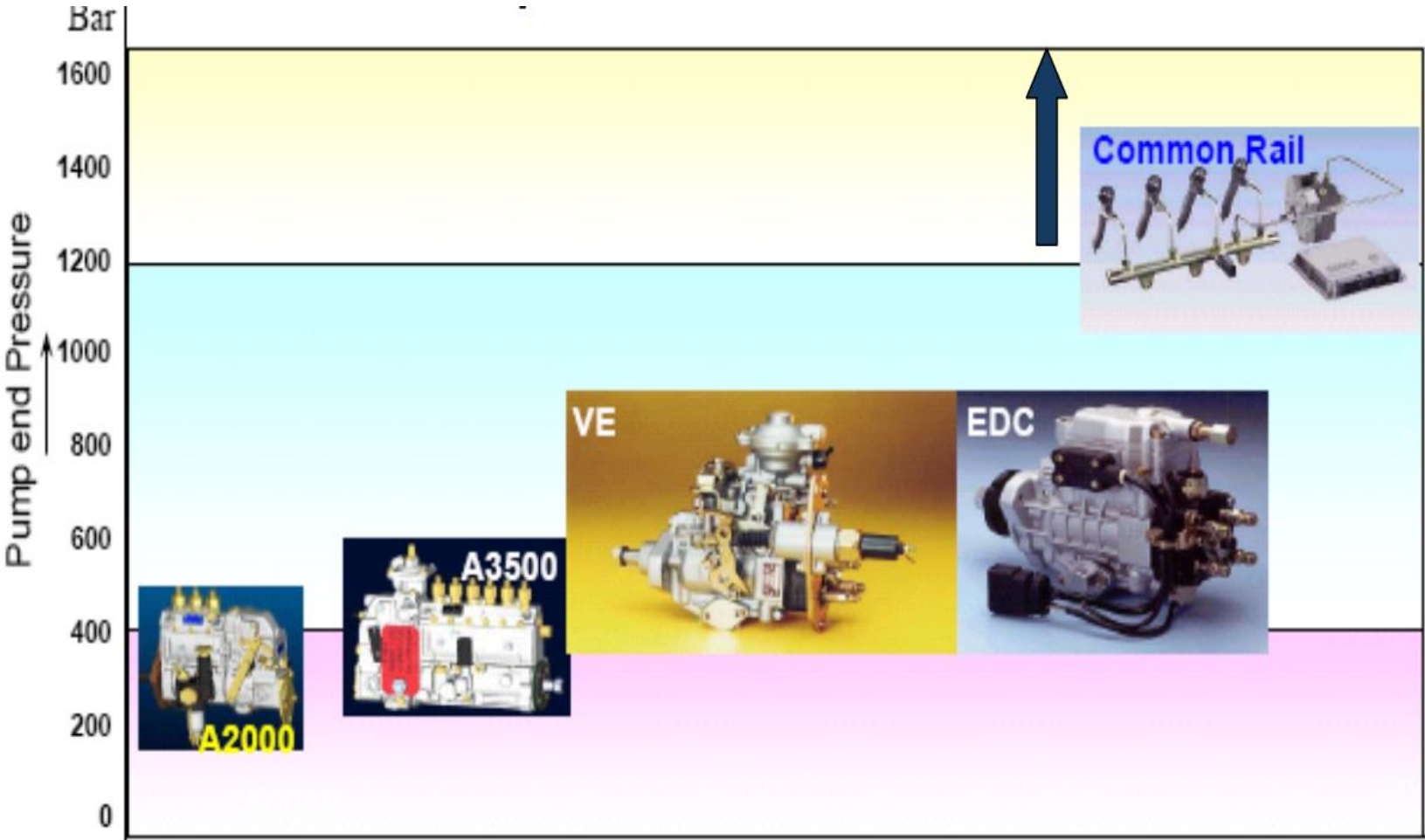
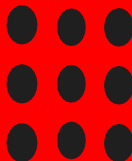
1. Visit fuel economy.gov:

- The EPA also maintains a website called fuel economy.gov, which provides comprehensive information on the fuel economy of all new cars sold in the US.
- You can search for specific makes and models, compare fuel efficiency between different cars, and learn more about fuel-saving technologies.





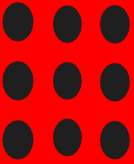
Technology Advance In Fuel Pump





MCQ

- Name the fuel system used in BS4 and BS6 vehicles?
 - a. Inline
 - b. Rotary
 - c. Common Rail Direct Injection
 - d. None of the above

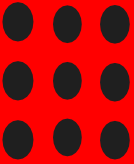




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Answer c. Common Rail Direct Injection





REFERENCES

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- Robert Bosch, “ Bosch Automotive Electrics and Automotive Electronics”, Springer View, 5th Edition, 2013.
- Tom Denton, “Automobile Electrical and Electronic Systems”, Elsevier, 3rd Edition, 2003.



THANK YOU

