SNS COLLEGE OF TECHNOLOGY
(An Autonomous Institution)
COIMBATORE-35

TOPIC

FUEL EFFECIENCY ANALYSIS

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- . At its most basic, fuel efficiency is defined as a measure of how much a car will convert energy in fuel into kinetic energy to travel. In other words, fuel efficiency shows how far your car can travel with a certain amount of fuel. In America, the concept is described as "miles per gallon" (mpg). Vehicles with better fuel efficiency tend to consume less fuel to carry out the same task. Therefore, reducing wasted fuel. Choosing a fuel efficient vehicle can bring a wide range of advantages: saving fuel costs, reducing carbon footprint, cutting our dependence on oil, etc. Let's take a quick look at why fuel efficiency is a crucial element you need to take into account, as well as the benefits it can offer you as a driver and a responsible citizen alike.
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- **Save Money On Gas**
- Oil prices are one of the major issues facing drivers today. Given the rising prices of fuel, it's probably time for you to consider saving money on gas. The gas mileage, the amount of gas your car consumes per mile, plays an important role in how much money you save on gas each year. According to some economists, you might save 4,500 USD for 5 years by driving a vehicle that gets 30 mpg rather than 20 mpg . Thus, if you start trying to drive a more fuel-efficient car and use less fuel, not only will you save a lot of money, but you can also spend that saved money on something more meaningful to you instead.
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- **Reduce Carbon Footprint**
- While you can try plenty of little things in your daily lives to reduce your carbon footprint, driving a car with better fuel efficiency is undoubtedly the best way to fight climate change. A recent study found that driving a more fuel efficient vehicle is by far the most realistic and effective action to achieve the largest cuts in emissions. The research says a car that gets 30 mpg would reduce total emissions by 5% than a vehicle that gets 20 mpg. So, if you want to contribute to a decrease in greenhouse gas emissions, buying a car that boasts better gas mileage may be the best option.
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- **Lower Dependence On Oil**
- According to statistics, over 70% of total U.S. on-road vehicles consume oil, and they account for nearly a fourth of the country's emissions, contributing to climate change. Moreover, the country paid about 120 million USD in 2014 for overseas oil, which was mainly imported from the Middle East. By owning a fuel efficient vehicle, you can reduce dependence on oil, as well as save money for both yourself and your country.

FUEL EFFECIENCY

Substantially improving vehicle efficiency has the potential to drastically increase the United States' economic, energy, and environmental security. On-road vehicles account for nearly 60 percent of total U.S. oil consumption and more than a quarter of the country's greenhouse gas emissions, the major contributor to climate change.
The Vehicle Technologies Office is supporting research to greatly improve the fuel efficiency and reduce the emissions produced by both light and heavy-duty vehicles. It also supports **FuelEconomy.gov**, which provides consumers with the **fuel economy of all vehicles back to 1984**, as well as **tips to help drivers save money and fuel**.

If VTO is fully successful in meeting its technical goals and these technologies are widely adopted, it would reduce highway petroleum use up to 1.8 million barrels a day by 2020. These technologies will help manufacturers reach **federal fuel economy standards** requiring new light-duty vehicles average 54.5 mpg by 2025 and new medium and heavy-duty vehicles become substantially more efficient. These technologies have the potential to save consumers and businesses trillions of dollars.

Much of this research focuses on technologies that can improve the efficiency of a variety of vehicles, including internal combustion, **alternative fuel**, and **plug-in electric vehicles**. VTO supports work in these areas to improve overall vehicle fuel economy and reduce emissions:

- **Combustion engine research** focuses on improving new combustion strategies that can greatly improve engine efficiency and minimize the emissions formation in the engine itself.

- **Emissions reduction research** focuses on reducing the cost and improving the efficiency of aftertreatment technologies that reduce exhaust emissions. It also has software to help calculate greenhouse gas and other emissions.

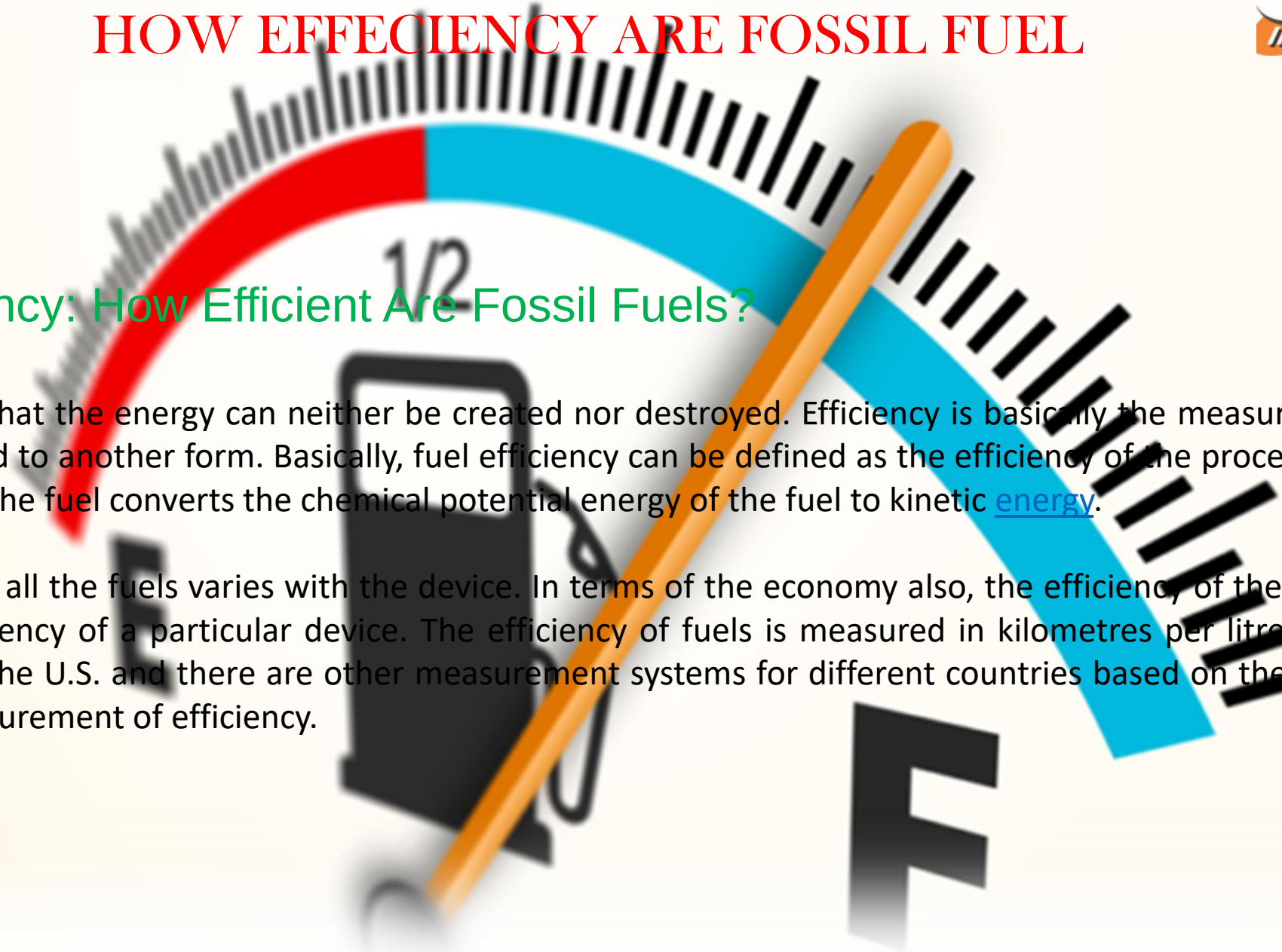
- **Fuel effects research** focuses on better understanding how fuels from new sources can affect advanced combustion systems.
- Idling reduction work focuses on minimizing unnecessary idling from vehicles.

- **Lightweighting research** focuses on lowering the cost and improving the performance of lightweight materials like high-strength steel, aluminum, magnesium, and carbon fiber.

- **Aerodynamics and other parasitic loss research** focuses on reducing the energy lost to non-engine sources such as drag, braking, rolling resistance, and auxiliary loads like air conditioning.

VTO carries out this research in partnership with industry through **U.S. DRIVE** for light-duty vehicles and **21st Century Truck Partnership** for heavy-duty vehicles. In addition, it works closely with its **national laboratories**, which offer a number of unique computing resources and research facilities. VTO selects research and development projects through a competitive solicitation process and offers **funding opportunities** throughout the year.

HOW EFFECIENCY ARE FOSSIL FUEL



Fuel Efficiency: How Efficient Are Fossil Fuels?

As we all knew that the energy can neither be created nor destroyed. Efficiency is basically the measure of the amount of energy converted to another form. Basically, fuel efficiency can be defined as the efficiency of the process in which thermal energy given to the fuel converts the chemical potential energy of the fuel to kinetic energy.

The efficiency of all the fuels varies with the device. In terms of the economy also, the efficiency of the fuel depends upon the energy efficiency of a particular device. The efficiency of fuels is measured in kilometres per litre in India, miles per gallon (mpg) in the U.S. and there are other measurement systems for different countries based on their standard units of use for the measurement of efficiency.

Coal:

Coal is responsible for 41% of the world's electricity generation. The overall efficiency of a coal power plant is 32% to 42%.

For example, let us take an example of two fuels: Gasoline and diesel oil and see why they differ in efficiency and cost.

Diesel oil:

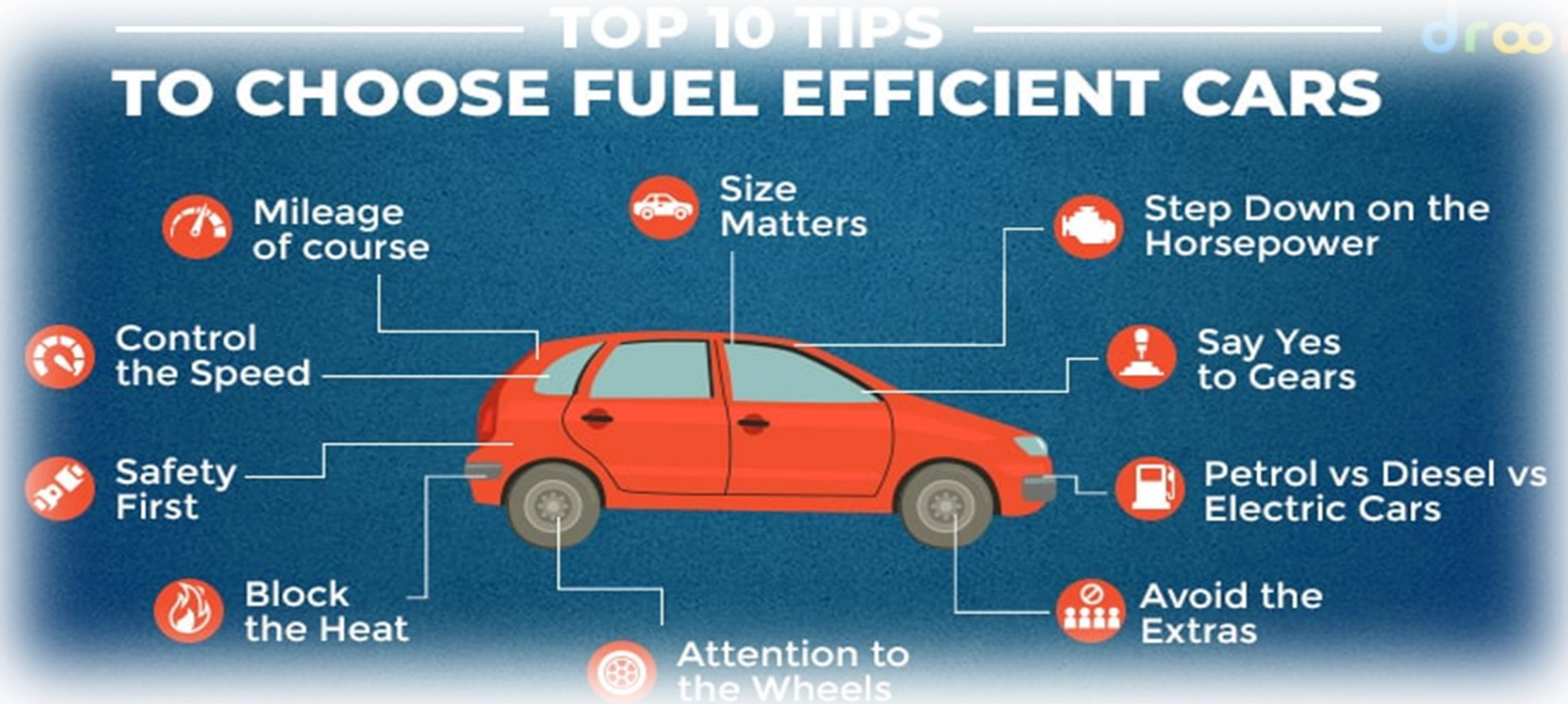
We see that people choose diesel not gasoline since it saves money. Most of the diesel consumption is seen in big trucks but nowadays diesel is also used in other segment vehicles. Diesel is 33% more efficient than gasoline when it comes to fuel mileage. This means that if we get 40 miles to the gallon on gasoline, a diesel equivalent engine will give 53.2 miles per gallon. A Diesel engine offers more torque than gasoline engines, this torque allows greater acceleration and helps to increase the fuel economy.

Factors which determine fuel efficiency:

.Environmental effects: This is the most primary reason why we choose the most efficient fuel. That is why we choose a diesel car as it uses less fuel per mile and it gives out less carbon dioxide. But diesel fuels are not totally pollution-free. It releases some compounds which are carcinogenic and very harmful to the environment.

•Engine performance: Engine performance decides the cost as well as the efficiency of the fuel. Diesel has a better engine performance, therefore, it is cheaper.

•Noise: This is also one of the important criteria. Diesel does not produce smoke or dust but gives a roaring noise.


TOP 10 TIPS
TO CHOOSE FUEL EFFICIENT CARS
Mileage of course
Size Matters
Step Down on the Horsepower
Control the Speed
Say Yes to Gears
Safety First
Petrol vs Diesel vs Electric Cars
Block the Heat
Avoid the Extras
Attention to the Wheels

THANK YOU