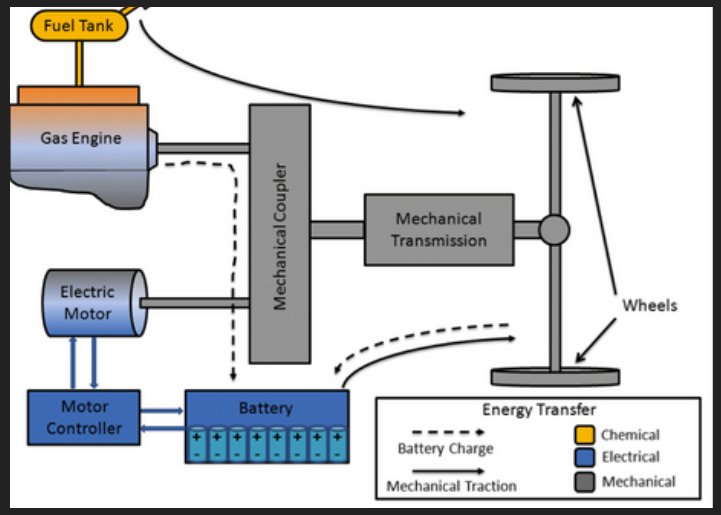
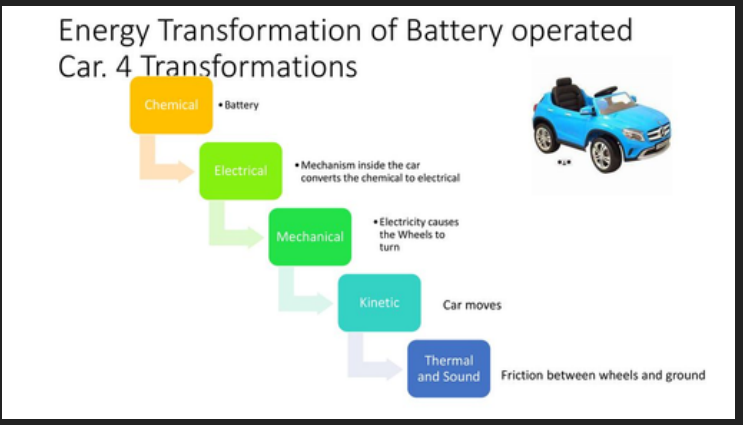
Energy Transformation Diagram

Conventional Car:



Electric Car:



Conventional Car

How do they work?

A conventional car uses a spark-ignited combustion engine. The fuel is fed into the combustion chamber and mixed with air in a spark-ignited mechanism. A spark from the spark plug ignites the mixture of fuel and air. The majority of conventional cars use either unleaded fuel or diesel. The fuel sits in a tank within the vehicle until it is needed by the engine.

Energy:

The majority of energy within a conventional car is lost within the engine as heat. Smaller amounts of energy are wasted as a result of combustion inefficiency, air pumping losses, and engine friction. Energy is also lost as sound.

Electric Cars

How do they work?

Plugging an electric vehicle into a charging station allows it to draw power from the grid. They power an electric motor, which rotates the wheels, by storing the electricity in rechargeable batteries. Electric cars feel lighter to drive because they accelerate faster than cars with conventional fuel engines. As previously mentioned electric cars do not use normal fuel like other cars, they use electricity that is sourced from a charging station.

Energy:

Over 60% of energy in an electric vehicle is wasted through heat. Electric cars use regenerative braking to regain the energy that is usually wasted by braking.

CONVENTIONAL VS. ELECTRIC CARS

BREANNA WERNDLY

Environmental Impact

Conventional Car:

An Australian car makes an average annual distance of 13,500km and contributes about 2.5 tonnes of carbon dioxide (CO_2) to the atmosphere. Cars and light commercial vehicles account for around 15% of Australia's CO_2 emissions, which are directly related to fuel consumption.

Electric Car:

Over the course of a year, just one electric car on the road can save an average of 1.5 million grams of CO_2. The main impact on the environment from electric cars comes from their production. The emissions produced during the production of an electric car are often higher than those produced during the production of a conventional car. This is due to the production of lithium ion batteries, which are a crucial component of an electric vehicle. The energy consumed to manufacture the car accounts for more than third of the lifetime CO_2 emissions from an electric car.

Pros & Cons

Conventional Car:

Pros:
- Better performance (speed, power, agility)
- Cheaper to purchase and maintain
- Lower insurance cost

Cons:
- Are not energy efficient
- Are not environmentally friendly
- Petrol prices fluctuate

Electric Car:

Pros:
- Less greenhouse emissions
- Cheaper to run
- Quieter to drive

Cons:
- Higher upfront costs
- Range limitations
- Time to recharge battery

References

Cars and the environment | RACWA. (2022). Retrieved 12 August 2022, from https://rac.com.au/about-rac/advocating-change/sustainability/cars-and-the-environment#:~:text=Your%20car%20and%20greenhouse%20gases,re-emitted%20back%20into%20space.

Subaru STI shock: New WRX won't get a fire-breathing performance hero as brand shelves all petrol-powered STI variants. (2022). Retrieved 12 August 2022, from https://www.carsguide.com.au/car-news/subaru-sti-shock-new-wrx-wont-get-a-fire-breathing-performance-hero-as-brand-shelves-all

Fuel 101: Choosing the right type for your car. (2022). Retrieved 12 August 2022, from https://www.mynrma.com.au/membership/my-nrma-app/fuel-resources/fuel-101-choosing-the-right-type-for-your-car#:~:text=Most%20cars%20on%20the%20road,could%20do%20some%20serious%20damage.

Cars and the environment | RACWA. (2022). Retrieved 12 August 2022, from https://rac.com.au/about-rac/advocating-change/sustainability/cars-and-the-environment#:~:text=Your%20car%20and%20greenhouse%20gases,re%2Demitted%20back%20into%20space.

Where the Energy Goes: Gasoline Vehicles. (2022). Retrieved 12 August 2022, from https://www.fueleconomy.gov/feg/atv.shtml#:~:text=In%20gasoline%2Dpowered%20vehicles%2C%20most,the%20engine%2C%20and%20combustion%20inefficiency.

Benefits of electric cars on the environment. (2022). Retrieved 12 August 2022, from https://www.edfenergy.com/for-home/energywise/electric-cars-and-environment

Petrol vs Electric vs Hybrid Cars | Allstar Fuel Cards. (2022). Retrieved 12 August 2022, from https://www.allstarcard.co.uk/news-insights/fuel-and-fleet/fleet-news/hybrids-vs-electric-vs-petrol/#:~:text=The%20main%20advantage%20of%20petrol,vehicles%20than%20hybrid%20or%20electric.