HT Auto
DRIVE YOUR PASSION

How do electric cars work? EV components and their functions

Electric cars rely on a lot fewer moving parts as compared to their ICE-powered counterparts.

Electric cars use a fewer moving parts compared to a fossil fuel vehicle.**(REUTERS)**

Electric cars have been witnessing a moment of awakening with the demands for these zero-emission models rising around the world. Electric cars not only promise zero tailpipe emission, but a significantly lower cost of ownership compared to their traditional ICE-powered models. While the consumers find electric cars more affordable considering the low cost of ownership compared to petrol or diesel cars, they are easier for maintenance as well.

This is because electric cars come with fewer components compared to fossil fuel vehicles. The key components of an electric car are - a battery pack, power control unit, electric motor, transmission and battery charger.

Battery pack

The battery pack is like the heart of any electric car. A battery pack determines an electric car's cruising range and power. Also, a battery pack can be called both magic and curse in the same shell as besides defining the range of the car, they also come at significantly high costs and bear a great weight as well. A battery pack is usually laid out as a big flat panel under the belly of the electric car. It contains smaller modules that include even smaller cells. The batteries store energy that provides juice for the vehicle to run. It also provides energy to other components of the vehicle like light, and dashboard elements.

Motor

Besides the battery pack, the electric motor is another very important component for any EV. An electric motor draws energy from the battery pack and it runs on AC power. The power control unit transforms the battery pack's DC power into AC for the motor. The motors send power to the axles helping them to rotate the wheels. More number of motors means more power to the vehicle and more speed for it. An EV can use a maximum of four motors, with each sending power to one wheel.

Transmission

Electric motors don't really require the transmission. Instead of multi-speed gearboxes available in fossil fuel vehicles, electric vehicles come with a direct transmission system. Instead of conventional transmission setups, electric cars use a drive mode selector, which is simpler than a traditional gearbox with lots of moving parts.

Power control unit

The power control unit is an important assembly that converts the DC power stored in the battery back into AC that most electric motors use. This process is completed using a component called an inverter, a version of which is used to power laptops or other devices using the 12-volt port in the car's dash. A power control unit interfaces the drivetrain to the accelerator, start button, and drive mode controller. It also oversees regeneration through which an EV channels power back to the battery pack during braking.

Battery charger

Batteries store energy in form of DC but the electric grid runs power in AC form. A battery charger is required to draw power from the grid to the vehicle's battery. Besides charging the battery pack, the charger also converts AC power to DC. There is a wide range of charging options involving electric cars. These include standard home chargers, fast chargers etc.