Ryan later use. fully charging these batteries can

Ryan KimShapiroEnglish1/9/18How Electric Cars WorkThe three fundamental components of an electric car are the batteries, electric motor, and the electronics controller.

Fully electric cars use a high capacity battery of some variety in order to power its systems. The car uses two batteries, an auxiliary battery and a larger battery pack. The auxiliary battery is used to initially start the vehicle and is used to power smaller systems such as onboard computers. The larger battery pack is used to power the cars battery throughout its trip.

The batteries are similar to a gasoline powered vehicles battery except for the fact that the electric car has more of them. They are stored under the car or in the trunk depending on the vehicle. The three common types of batteries used in electric cars are lithium-ion batteries, lead-acid batteries, and nickel-metal hydride batteries.

Lithium-ion batteries are batteries that are commonly used small devices such as phones, they generally give the best performance for range and are lighter than the other types of batteries but are also the most expensive of the three types. Lead-acid batteries are the most common batteries and the cheapest and are still used in gasoline powered cars to start the engine and power auxiliary systems. Nickel-metal hydride batteries are more expensive than lead-acid batteries but also have better performance. Some electric cars also have a feature known as regenerative braking which uses a the motor to charge the batteries as the vehicle brakes in order to regain some of the energy used to accelerate. The batteries are charged at designated charging stations or a home charging station which supply the vehicle with

electricity that passes to a charger inside the car that converts the electricity to a form that the batteries can store and later use. Fully charging these batteries can take several hours depending on the capacity. Electric cars use power from the battery to power an electric motor which propels the vehicle.

There are two types of electric motors that are commonly used in electric cars. These types are direct current (DC) motors and alternating current (AC) motors. DC motors are generally simpler and cheaper with the advantage of quick bursts of rapid acceleration but doing this too much can result in heat buildup in the engine. AC motors are readily available which allows cars to have various shapes, sizes, and energy consumption to match the car.

The AC motors also feature the aforementioned regenerative braking. The motors are pulsed on and off to match the accelerator pedal in the car so that if the pedal is halfway down, the motors are half on and half off during the time it is pressed down. The car’s motor powers the cars motors to propel it forward. The electronics controller is another fundamental component of an electric car. The controller takes power from the batteries and supplies it to the motors. It uses a potentiometer which is connected to the accelerator to decide how much to accelerate the vehicle. A potentiometer is a device which provides different levels of electrical resistance based on how far down the pedal is pushed.

The controller then takes this electrical resistance and interprets it to determine how much to accelerate. After the controller determines how much to accelerate, it turns the the motor on and off in a ratio similar to the percentage of how far down the pedal is pushed. So if the pedal is pushed

down 25% of the way, the controller will have the motor on a quarter of the time and have the motor off three quarters of the time and at a stop the car can engine doesn’t have to run which helps efficiency. The controller also provides power to other electrical components from the batteries. "Works CitedBrain, Marshall.

“ How Electric Cars Work.” HowStuffWorks, HowStuffWorks, 27 Mar. 2002, auto. howstuffworks. com/electric-car2. htm.

“ How Do All-Electric Cars Work?” Alternative Fuels Data Center: How Do All-Electric CarsWork?, 21 May 2017, www. afdc. energy. gov/vehicles/how-do-all-electric-cars-work. “ How Do Battery Electric Cars Work?” Union of Concerned Scientists, 26 Feb.

2015, www. ucsusa. org/clean-vehicles/electric-vehicles/how-do-battery-electric-cars-work. Rinkesh. “ How Electric Cars Work.” Conserve Energy Future, 4 Jan.

2017, www. conserve-energy-future. com/howelectriccarswork. php.