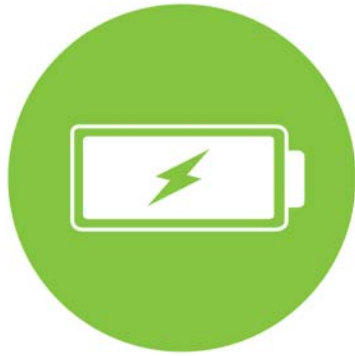


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The Sparkling Secrets of Electric Vehicle Battery Degradation



Electric vehicles (EVs) have become a hot topic in recent years, thanks to their environmentally friendly nature and futuristic appeal. One crucial part of an EV is its battery, which stores and provides power for the vehicle's electric motor. While electric vehicle batteries are designed to be long-lasting, they do degrade over time due to several factors. In this reading passage, we will explore how electric vehicle batteries degrade and what factors contribute to this process.

How Electric Vehicle Batteries Work

To understand battery degradation, it's essential to know how electric vehicle batteries function. EV batteries are typically made of lithium-ion cells, similar to those found in your smartphone or laptop. These cells store electrical energy and release it to power the car. When you charge your EV, electricity flows into the battery, causing chemical reactions inside the cells, which store energy.

Factors Leading to Battery Degradation

- **Chemical Reactions:** Over time, the repeated charging and discharging of the battery cause chemical reactions that can lead to the breakdown of materials inside the cells. This is a natural part of the battery's aging process.
- **Temperature:** Extreme temperatures, whether too hot or too cold, can harm the battery. High temperatures can accelerate chemical reactions and reduce battery life, while cold temperatures can slow down the chemical reactions and reduce the battery's efficiency.
- **Cycling:** Every time you charge and discharge your EV's battery, it goes through a cycle. The more cycles a battery goes through, the more its capacity to hold a charge decreases. This is why overusing or overcharging your battery can lead to faster degradation.



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- **Depth of Discharge:** If you regularly drain your battery completely before recharging, it can accelerate battery degradation. It's better to keep your battery within a certain range of charge for longer lifespan.
- **Age:** Like all things in life, batteries age with time. Even if you rarely use your EV, the battery will gradually degrade just from sitting idle.

Effects of Battery Degradation

As an electric vehicle battery degrades, several noticeable effects can occur:

- **Reduced Range:** One of the most apparent effects is a decrease in the vehicle's driving range. As the battery's capacity decreases, you'll find yourself needing to charge more frequently.
- **Slower Charging:** Degraded batteries may take longer to charge, making it less convenient for EV owners.
- **Loss of Power:** The electric motor might not perform as well with a degraded battery, resulting in slower acceleration and decreased overall performance.
- **Increased Heat:** A degraded battery can generate more heat during charging and discharging, potentially leading to safety concerns.
- **Cost of Replacement:** Eventually, EV owners might need to replace their battery, which can be costly. However, advancements in battery technology aim to prolong battery life and reduce replacement costs.

