

Can electric vehicle charging piles improve preventive maintenance effect?

This study has good application prospects in improving the preventive maintenance effect of electric vehicle charging piles. In recent years, electric vehicles have been gradually developed and widely used in many countries due to their advantages of cleanliness, environmental protection, and efficiency.

What happens during the service life of electric vehicle charging pile?

During the service life of the electric vehicle charging pile, the cumulative factor of service life will gradually develop toward the state inducement factor (deterioration causes defects). However, before the defects are formed, the failure rate will also gradually increase with the process of cumulative damage.

What is a preventive maintenance decision model for electric vehicle charging piles?

By establishing a preventive maintenance decision model for electric vehicle charging piles, potential faults can be identified in a timely manner and appropriate maintenance measures can be taken, thereby improving the reliability and service quality of the charging piles.

What is the charging model of the DC charging pile?

Charging model of the DC charging pile. On the left is the off board charger (i.e., DC charging station), and on the right is the electric vehicle, which are connected through vehicle plugs and sockets. We can clearly see that the charging model is mainly composed of three parts: "off board charger," "vehicle interface," and "electric vehicle."

What happens if a charging pile is connected to a power system?

When more numbers of charging piles are connected to the power system, the energy consumption side will bear more loads, and the power supply between the three phases will alternate, which will cause harmonic effects. Specifically, harmonics refer to the noise signals mixed in the voltage signal during the voltage propagation process.

How severe is electric vehicle charging pile deterioration?

The severity can be characterized by the state evaluation results of the electric vehicle charging pile. During the service life of the electric vehicle charging pile, the cumulative factor of service life will gradually develop toward the state inducement factor (deterioration causes defects).

After high-temperature storage, the batteries were discharged and charged to various SOC (state of charge), including 0 %, 20 %, 40 %, 60 %, 80 %, 100 % based on initial ...

Prices for battery packs used in electric vehicles and energy storage systems have fallen 87% from 2010-2019. As the prices have fallen, battery usage has risen. ... In this ...

Electric vehicle (EV) has gradually played a pivotal role in the people's life due to the rapid development of EV and the Internet of Things (IoT) technology. The first half of 2020 ...

The charging station localization and charging pile determination based on the distribution of EVs can effectively decrease the cost of users and urban construction. There are ...

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ESS is an essential component and plays a critical role in the voltage frequency, power supply reliability, and grid energy economy [[17], [18], [19]].Lithium-ion batteries are ...

In the proposed plan, for the outgoing trips, when a bus travels around 5 km, it reaches a charging station, and the battery SOC increases to 0.87. In order to serve the next ...

To investigate the greenhouse gas emissions associated with EV charging, and the potential to reduce these emissions by load shifting in response to grid emissions factors, ...

Several charging systems utilizing solar PV, wind power, energy storage systems (ESSs), supercapacitors, and fuel cells have been developed to facilitate low-emission ...

Kamath and colleagues 53 analyzed the scenario of second-life LIBs as fast-charging energy storage in terms of economic cost and life cycle carbon emissions. ...

Efficient operation of battery energy storage systems, electric-vehicle charging stations and renewable energy sources linked to distribution systems ... The depth of charge ...

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