New energy battery repair mode selection

When should power batteries be replaced?
When the capacity of the power battery drops to 70-80% of the original capacity,traffic accidents are likely to occur and replacement is necessary (Zhang et al.,2020). According to the forecast of Ma et al. (2018),more than 1.3 million tons of power batteries will be replaced by 2025.

What factors affect the re-manufacturing decision of EV power battery?
Gu et al. (2018) studied the three-stage model of EV power battery CLSC,which consists of a manufacturer and a remanufacturer. The results showed that the purchase price of returned batteryplays a vital role among the variables that affect the (re-)manufacturing decision.

Why should we support new technology in power battery recycling?
Third,we should support new technologies. The power battery technology is in the development stage. The recycling technology must keep pace with the times,improve the cascade utilization rate and material extraction rate,and maximize the effective utilization of waste batteries.

What are the main battery recycling policies outlined in the flow chart?
The main battery recycling policies outlined in the flow chart include the subsidy policy and the recycling advocacy policy. The recovery rate from the impact of price spreads is described by the impact of recycling subsidies on the price spreads of different recycling channels.

Do EV batteries need to be replaced?
As the core component of an EV, the power battery has strict requirements for use and maintenance. When the capacity of the power battery drops to 70-80% of the original capacity, traffic accidents are likely to occur and replacement is necessary (Zhang et al., 2020).

What happens if the batteries of retired new-energy vehicles are not recycled?
If the batteries of retired new-energy vehicles are not effectively recycled,it will cause a great waste of resources,as surplus electricity is a crucial factor that affects the development of stand-alone renewable energy systems and batteries are the primary devices used to manage this surplus .

In the market, BAK Battery is building a waste new energy vehicle dismantling and recycling" project in Shenzhen; Dongfeng Motor is supplying power to new energy vehicles by recycling battery storage equipment; and Beehive Energy is carrying out in-depth cooperation with Zero Run Automobile in the fields of battery recycling and secondary utilization of resources.

Battery swapping mode (SM), as a novel alternative, can offer an ideal solution by exchanging depleted batteries for recharged ones at swapping stations in the middle of long trips,...

Competition in China"s electric vehicle industry has intensified significantly in recent years. The production mode of power batteries, serving as the pivotal component in these vehicles, has emerged as a critical challenge for electric vehicle manufacturers. We considered a system comprising an electric vehicle (EV) manufacturer with power battery production ...

The main contributions of this work are as follows. First, we study the new problem of recycling and partial echelon utilization of EV spent power batteries. Second, we propose four novel hybrid-channel spent power battery recycling modes and study the inverse ...

Using the combination of Analytic Hierarchy Process (AHP) and Fuzzy Comprehensive Evaluation (FCE), we use the questionnaires and expert evaluation methods to evaluate and analyze the input and output of the battery swap enterprises, supply chain risk resilience and competitiveness of new energy vehicles under the three different supply chain ...

To improve the recovery rate of power batteries and analyze the economic and environmental benefits of recycling, this paper introduced the SOR theory and the TPB and ...

In this paper, we analyze the differences in the supply chain structure of the three battery swap models led by car manufacturers, battery manufacturers and battery swap operators, and build ...

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The vehicle-electricity separation battery-swap mode of NEVs is an important initiative that facilitates the development of new business modes for the circular economy. This battery-swap mode significantly reduces the waiting time for energy replenishment, thus enhancing the consumer experience [103, 104].

Electric vehicle manufacturers equipped with battery production technology exhibit higher profitability within a perfectly competitive battery production mode, while ...

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In this paper, the critical issues for power batteries reusing in China are systematically studied. First, the strategic value of power batteries reusing, and the main modes of battery...

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To improve the recovery rate of power batteries and analyze the economic and environmental benefits of recycling, this paper introduced the SOR theory and the TPB and constructed the system dynamics model of power battery recycling for new-energy vehicles. Through dynamic simulation, the following main conclusions were obtained.

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The continuous progress of society has deepened people"s emphasis on the new energy economy, and the importance of safety management for New Energy Vehicle Power Batteries (NEVPB) is also increasing (He et al. 2021).Among them, fault diagnosis of power batteries is a key focus of battery safety management, and many scholars have conducted ...

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