Battery production closed-loop management system

Can a closed-loop supply chain make a profit?
Closed-loop supply chain (CLSC) can gain profitby collecting waste products from consumers and elicit useful parts and remanufacturing them alongside with manufacturing new products from raw materials (Sane Zerang et al.,2018).

Why do EV batteries need production R&D?
In addition,investing in production R&D during the manufacturing process can substantially boost the energy density of EV power batteries,thereby significantly prolonging their lifespan(Zeng et al.,2019). Production R&D is also competitive tool to enhance customer's willingness to purchase the products (Taleizadeh et al.,2019).

How important is research & development in EV power battery manufacturing?
The modern EV power battery manufacturing sector acknowledges research and development (R&D) as a fundamental pillar of corporate strategic growth(Zhang et al.,2017).

How does production R&D affect waste EV power batteries?
Third,our main findings reveal that production R&D positively affects the recycling pricesof waste EV power batteries and the buyback prices of low-quality batteries. Government subsidies can significantly enhance this effect,encouraging more consumers to return their waste EV power batteries.

What is the profit function of EV power battery manufacturer?
The profit function of the EV power battery manufacturer can be expressed as follows: (1) In the profit function of EV power battery manufacturer,stands for the profit of manufacturing power batteries from new components,while stands for the profit of remanufacturing power batteries from recycled products.

How to optimize the decision-making of power battery CLSC?
Jiao et al. (2023) found that the combination of carbon trading scheme,mature technology,and moderate competition recycling marketis the best way to optimize the decision-making of power battery CLSC. A summary of the most relevant literature is given in Table 1.

For example, Winkler (2011) [63] introduced the sustainable supply chain network (SSCN) concept by moving from isolated applications of waste management in the ...

Power Battery Recycling Model of Closed-Loop Supply Chains Considering Different Power Structures Under Government Subsidies November 2024 Sustainability ...

To test the entire battery management, at least one cell module must be integrated into the HIL system.

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Closed-loop operation of the controller functions requires cell ...

EcoPro has established a "Closed Loop Eco-System" that integrates all the facilities required for the entire production process, from recycling used batteries (EcoPro ...

Stabilizing battery production and reaching expected efficiency levels necessitates integration of quality processes across the value chain. A holistic quality approach built on a digital closed ...

Compared with direct disassembly, EVs battery recycling has potential energy-environment-economic value (Zhang et al., 2023a). EVs battery production is a high energy ...

As shown in Fig. 1, a closed-loop process including pretreatment, sulfur-assisted roasting, water leaching, and regeneration, was used to realize the recycling of spent lithium ...

Therefore, this paper constructs a closed-loop supply chain composed of power battery manufacturers, sellers and third-party recycling companies based on the ...

Research on coordination of the NEV battery closed-loop supply chain considering CSR and fairness concerns in third-party recycling models. ... R is an "intermediary" that does not have ...

Siemens" Battery Smart Manufacturing provides a closed-loop quality approach that helps your business to leverage engineering and production data while systemizing the ...

The development of a wearable, easy-to-fabricate, and stable intelligent minisystem is highly desired for the closed-loop management of diabetes. Conventional ...

Smart manufacturing enables battery manufacturers to address unique quality challenges by streamlining end-to-end quality efforts with a closed-loop QMS. A closed-loop QMS leverages a common PLM infrastructure to enable ...

As the energy transition and electrification of mobility drive the explosive demand for batteries, Christophe Mazeaud, director of Battery Industry Solution, Siemens Digital Industries Software, discusses the key role that a ...

Optimising the decision-making of a power battery closed-loop supply chain (CLSC) and establishing a well-organised recycling system of waste power batteries are key to ...

The world"s population increase in concert with an ever-increasing average affluence leads to accelerated rates in the consumption of resources and the production of ...

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The closed loop recycling system. The concentration of metals (manganese, cobalt, nickel) used in the cathodes of the battery packs often exceed metal concentrations found in natural ores. ... Production began in ...

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