China’s End-of life Electric Vehicle Recycling Technology & Equipment and Demonstration projects

Liu Yongguang

Shanghai Jiao Tong University

Malaysia

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CONTENTS

catalogue

Policy in China

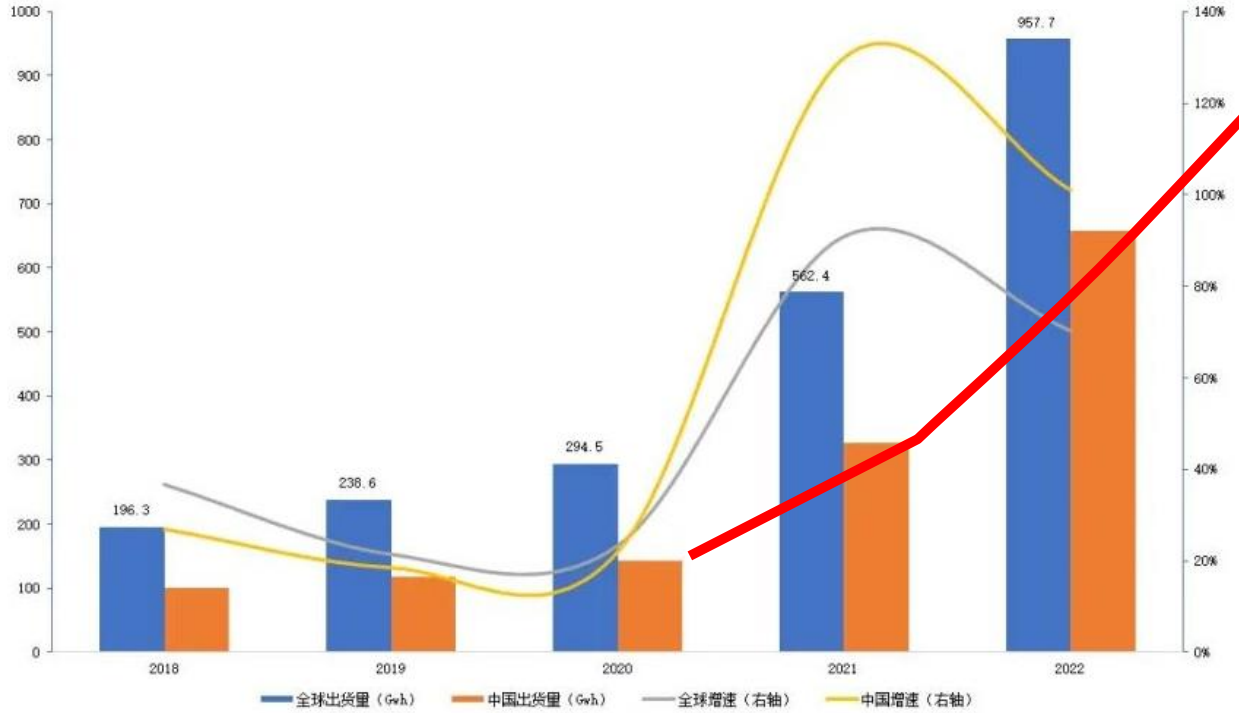
Shifts from traditional fuel vehicles to electric vehicles, and the extension of power battery disassembly to recovery utilization

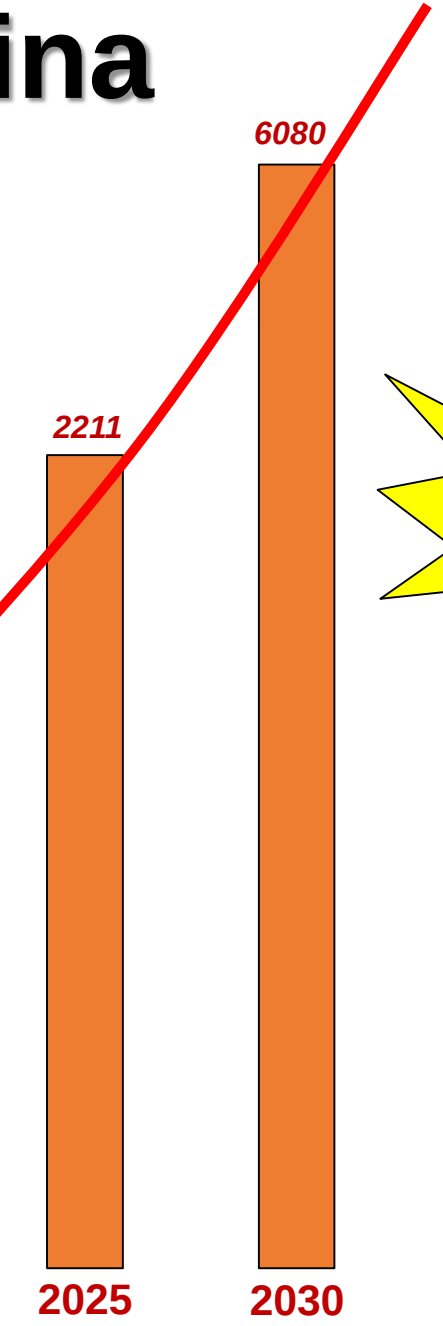
Technical Specification for Recycling and Demolition of Scrapped Vehicles (GB 22128-2019)	• Requirements for the site construction, equipment and facilities, personnel, traceability management, safety and environmental protection of electric vehicle disassembly.
Technical Requirements for Recycling and Disassembling of Scrapped E-Vehicles (SB/T 11238-2023)	• Safety protection requirements, factory Incoming inspection and classification requirements, storage requirements for scrapped electric vehicles, factory transfer requirements, disassembly requirements for scrapped electric vehicles, and power battery storage requirements.
Industry Standard Conditions for recovery Utilization of Spent Traction Batteries in New Energy Vehicles (2019 version) (Under revision)	•The new energy vehicle spent power battery for multi-level, multi-purpose and rational utilization process, mainly including cascade utilization and recycling. •Cascade utilization refers to the necessary detection, classification, separation, repair or recombination of power batteries into cascade battery products •Recycling refers to the process of dismantling, shreding, sorting, material repair or smelting of waste power batteries for resource utilization.
Management Measures for recovery Utilization of Traction Batteries for New Energy Vehicles (Draft for Comments)	•Automobile production enterprises shall assume the main responsibility for recycling; •Battery production enterprises shall assume the responsibility of recycling; •Battery leasing operation institutions, motor vehicle maintenance operators, recycling and dismantling enterprises of scrapped motor vehicles, recycling service outlets, recycling operators, recovery utilization enterprises and other units that produce waste power batteries shall fulfill their responsibilities; •Ensure the standard utilization and environmental protection treatment of waste power batteries.

Market and recovery in China

Production and sales of Lithium battery

According to the White Paper on the Development of China's Lithium-ion Battery Industry (2023), in 2022, China's lithium-ion battery sales reached 660.8GWh in 2022, with a year-on-year growth of 97.7%, accounting for 69.0% of the global total sales of lithium-ion batteries. It is expected that global lithium-ion battery sales are expected to reach 2211.8GWh and 6080.4GWh by 2025 and 2030, respectively, with a compound growth rate of 22.8%.



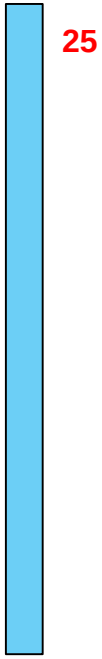


10 times
VS 2022

Market and recovery in China

Production and sales of new energy vehicles

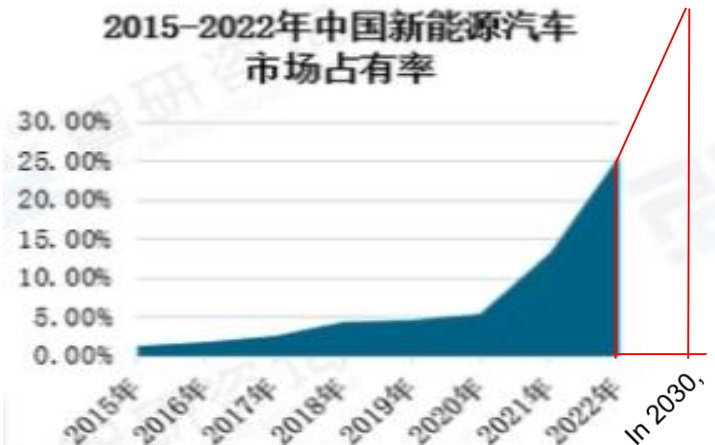
10 Times

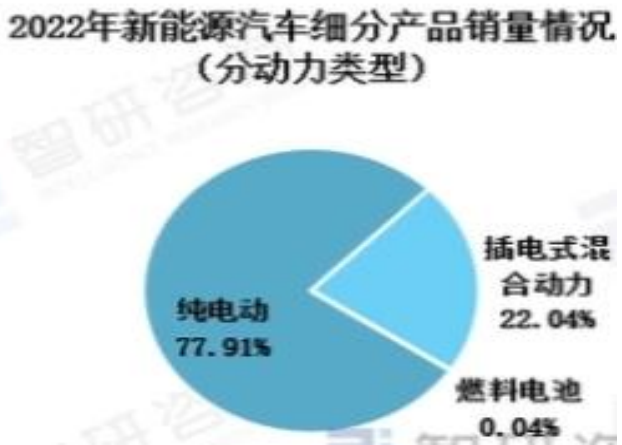


25 Million vehicles

2030年

50%-80%





Market and recovery in China

Ownership of new energy vehicles

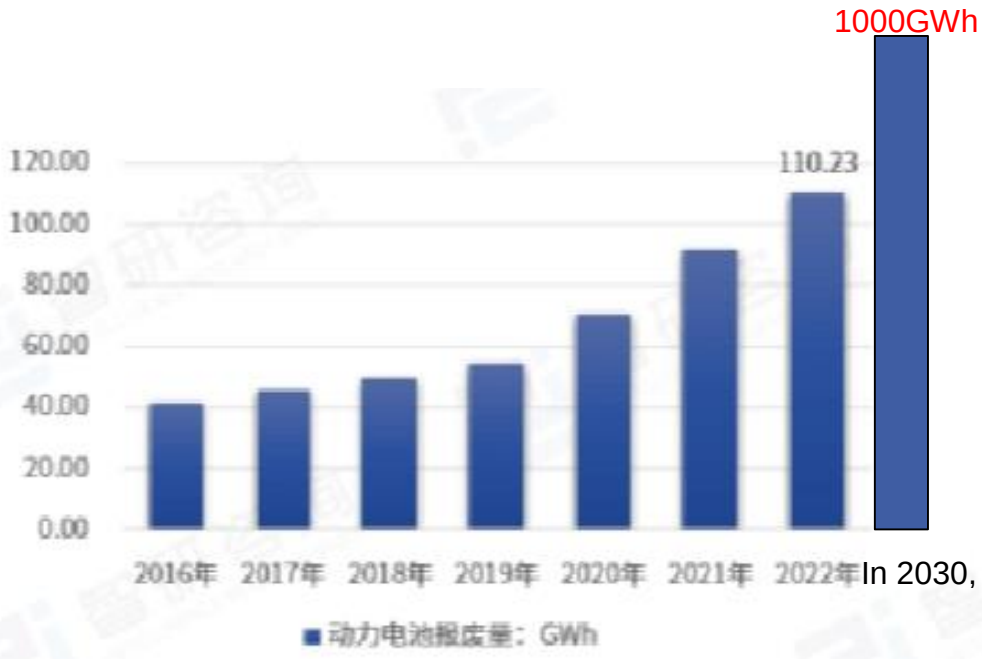
Market and recovery in China

Volume of scrapped power batteries

Ten times the speed VS 2022

At the end of June 2023
the volume of new energy vehicles in China is 16.2 million, and it is estimated to be 100 million by 2030

Based on the average 5-8 years of scrapping and an average annual growth rate of 40-50% for new energy vehicles, 4 to 5 million scrapped new energy vehicles will be recovered by 2030



In 2030,

Disassembly and recycling technology

Green disassembly concept

safe

Establishing comprehensive battery leakage and explosion protection measures. For processes that generate exhaust gas and harmful dust, all are mechanically and automatically disassembled to effectively protect the personal health and safety of workers.

compliance

Ensure that all dismantling processes, safety, and environmental protection comply with relevant national standards and regulations, and establish a foundation for enterprises to obtain qualifications for dismantling power batteries and enter the recycling whitelist.

environmental protection

For the waste gas and wastewater generated during battery storage, battery cell discharge, and battery cell disassembly processes, environmentally friendly treatment technologies are adopted to ensure that the factory's emissions meet national environmental requirements.

meticulous

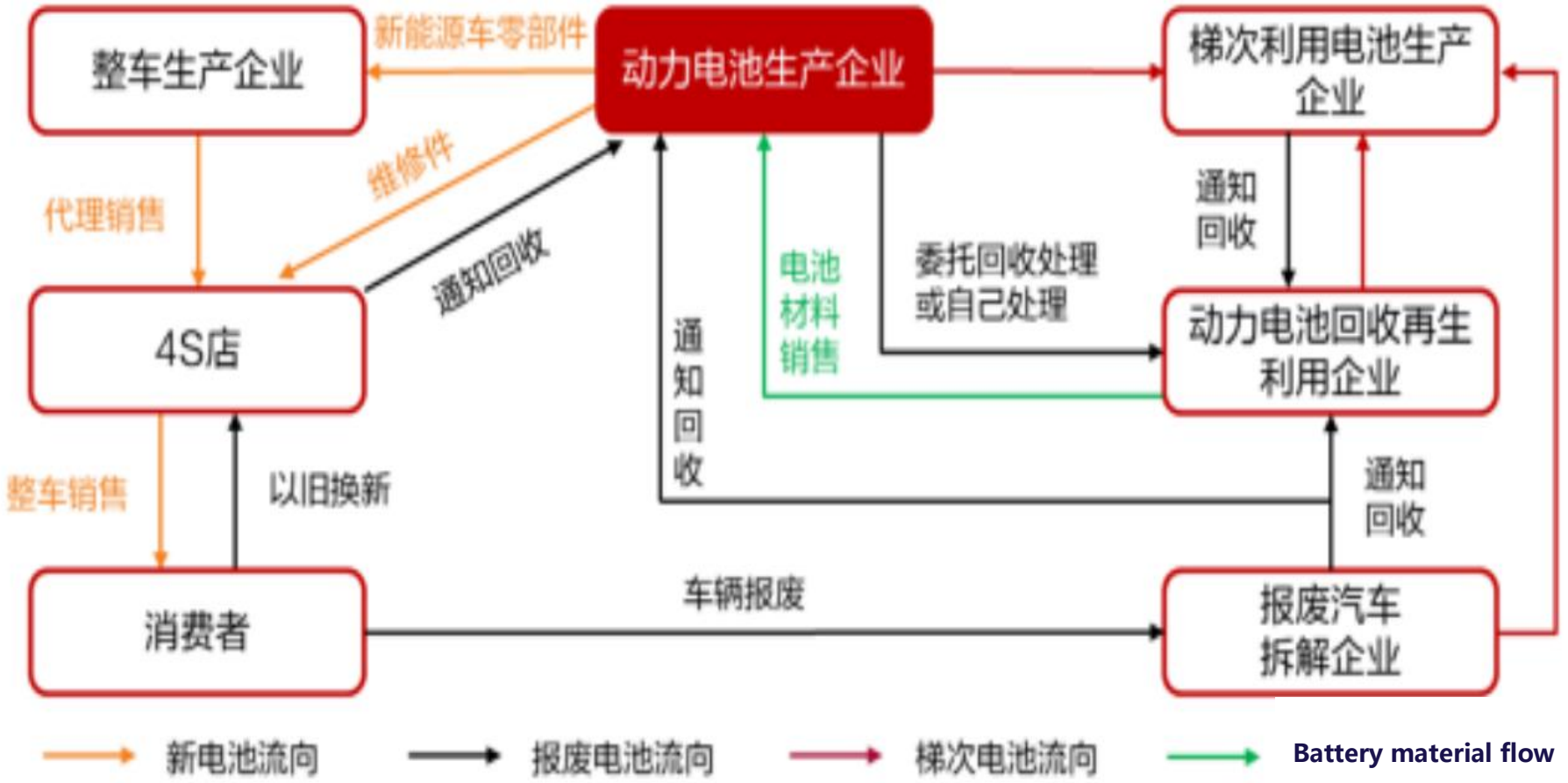
From the battery pack to the positive and negative electrode plates, all other materials generated during the disassembly process can be classified and collected, helping customers maximize their recycling value.

highly efficiency

The efficiency of battery cell disassembly is more than 50% higher than that of manual disassembly, and the use of auxiliary equipment in difficult disassembly processes greatly reduces manual labor intensity. Modular combination can adapt to different production capacity requirements of manufacturers.

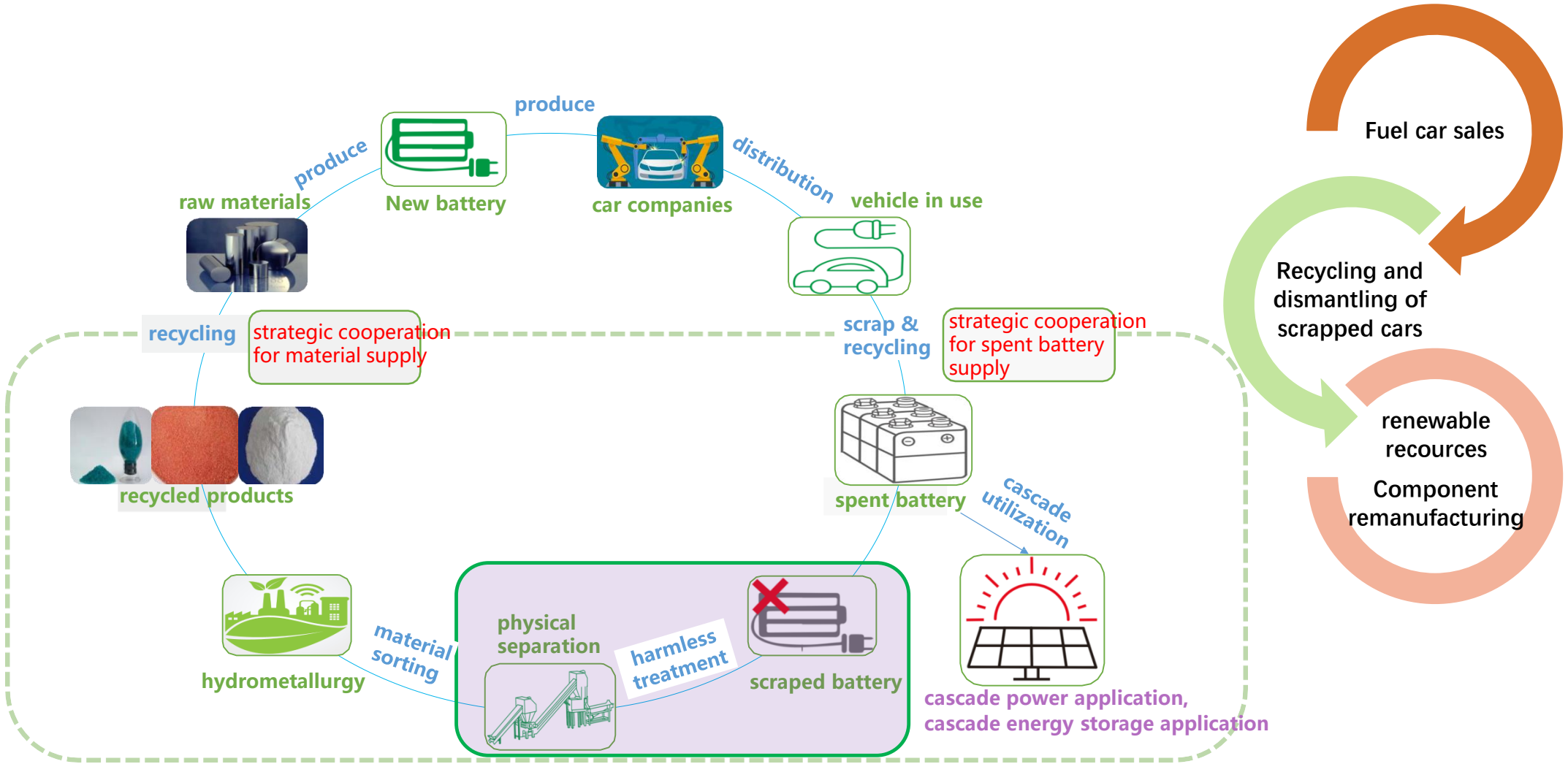
Disassembly and recycling technology

Whole life cycle of the power battery



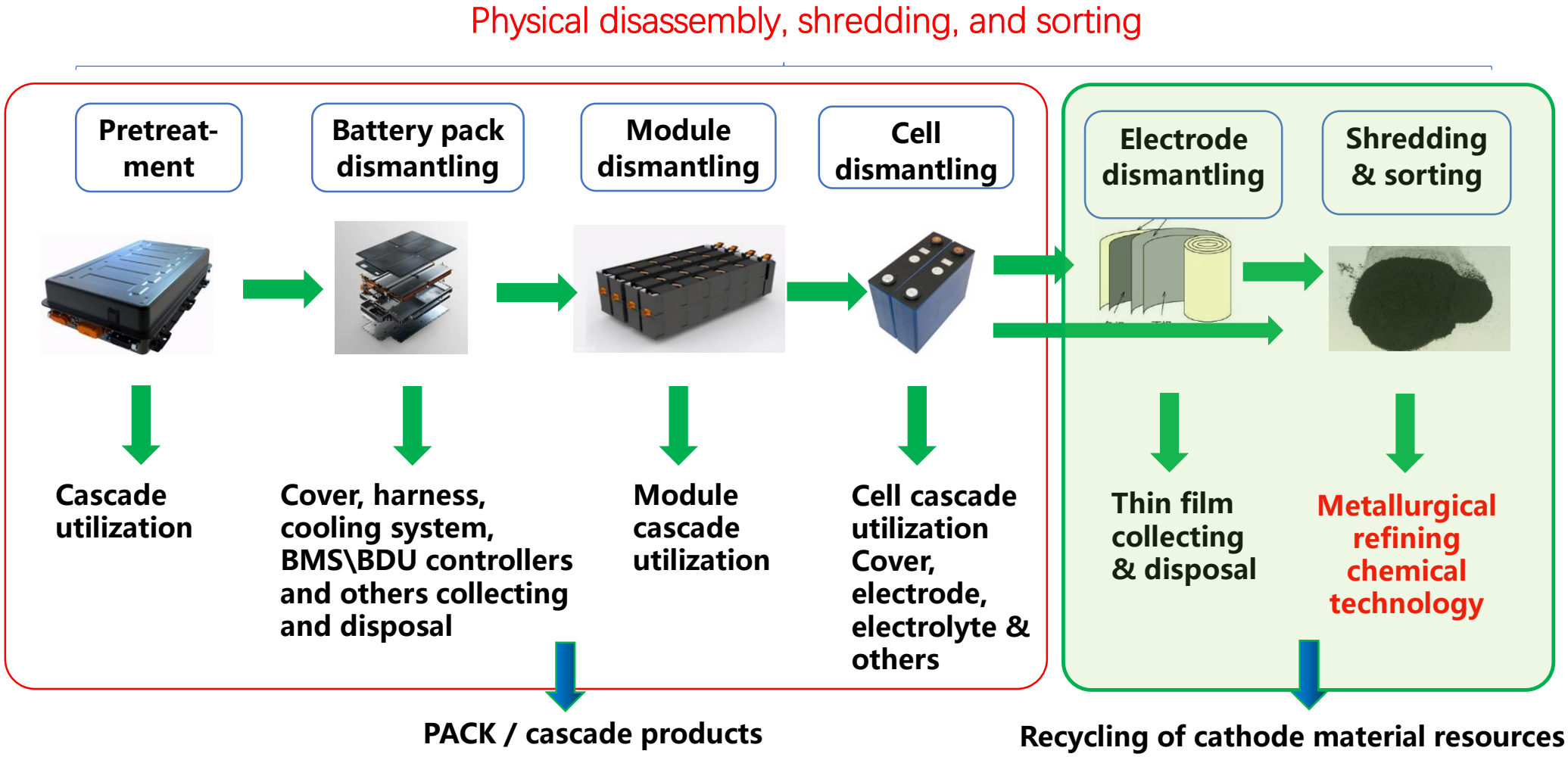
Disassembly and recycling technology

Recycling ecosystem of recovery utilization of scrapped batteries



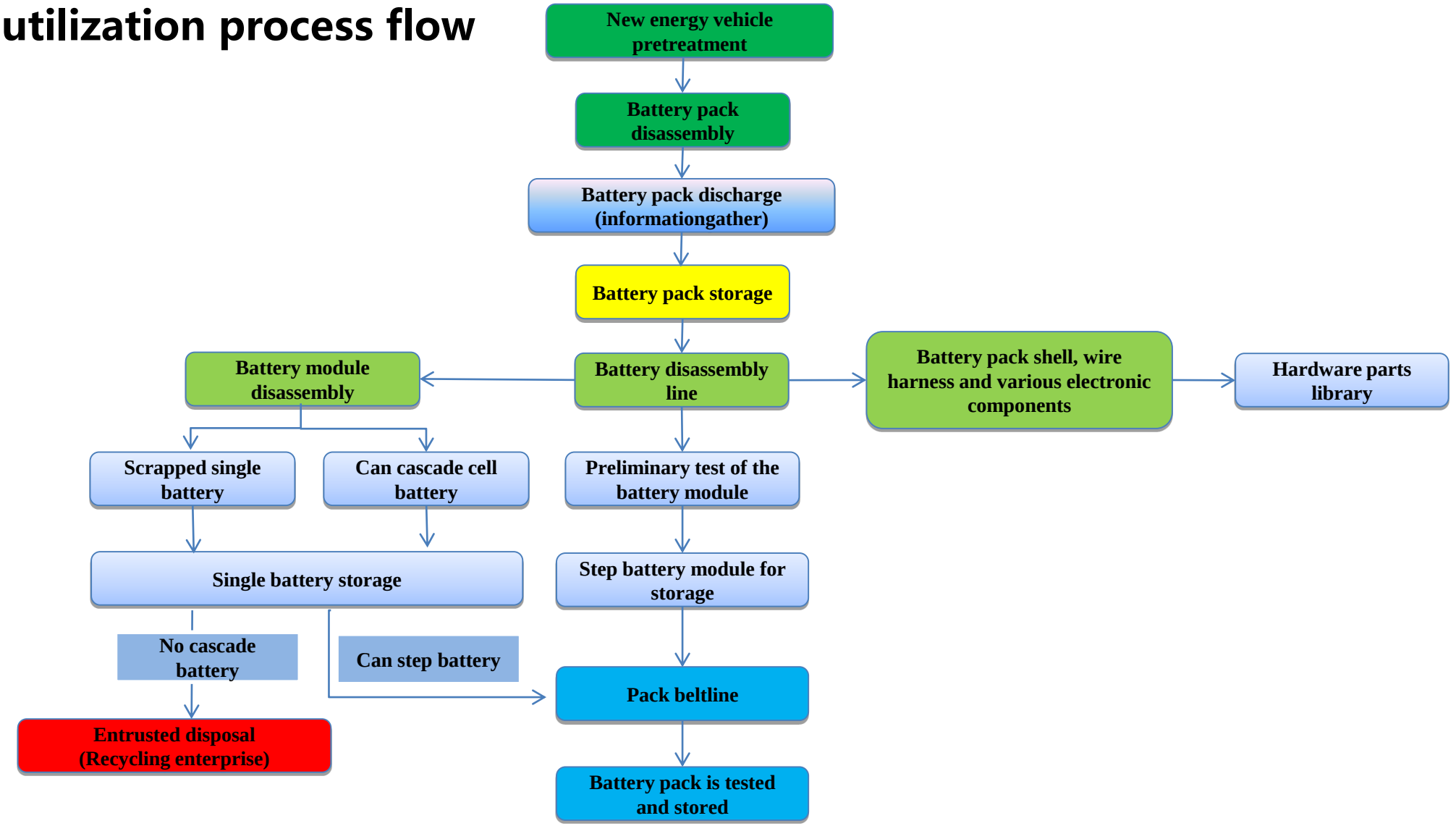
Disassembly and recycling technology

Recovery utilization of the technology guide map



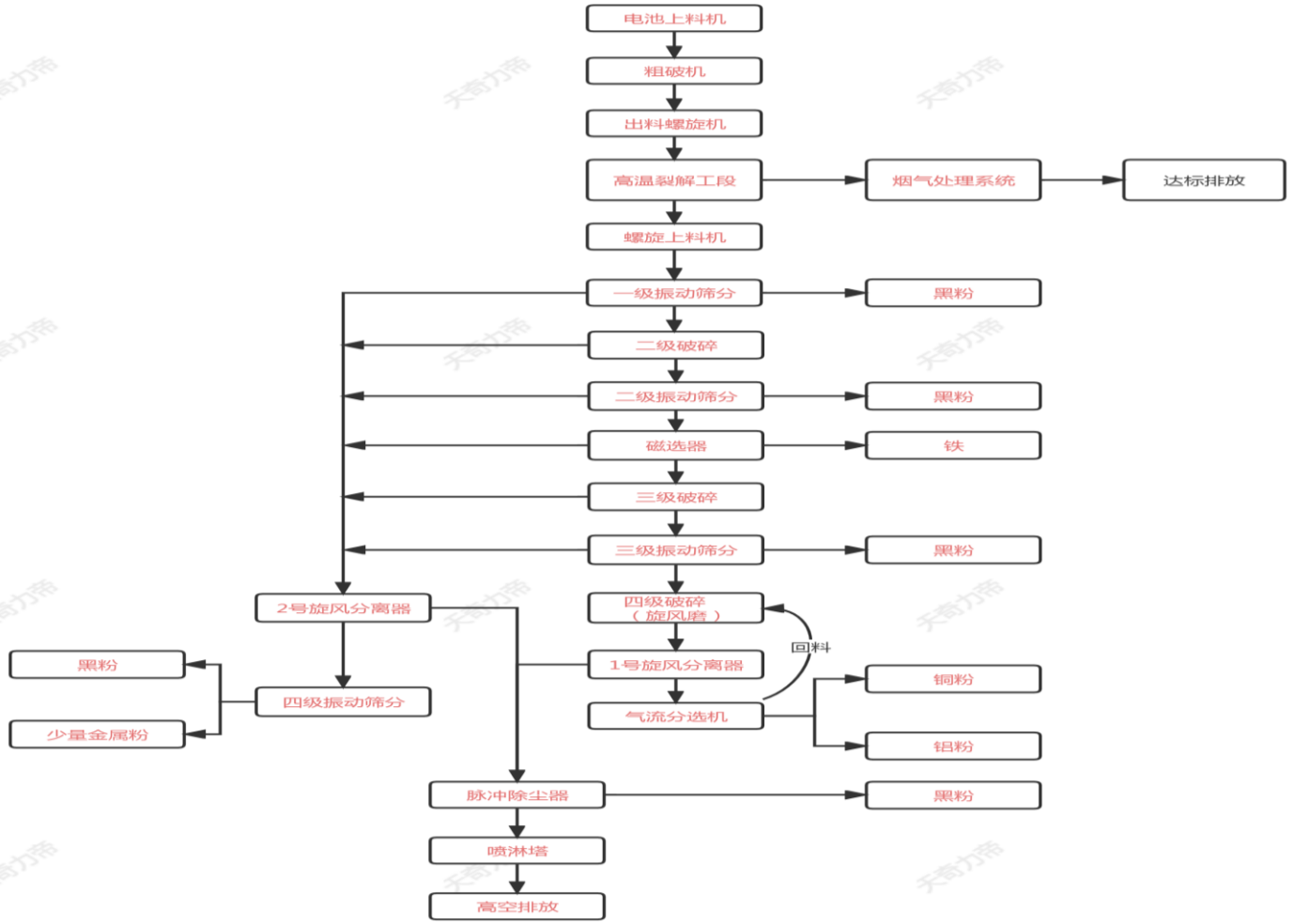
Disassembly and recycling technology

Cascade utilization process flow



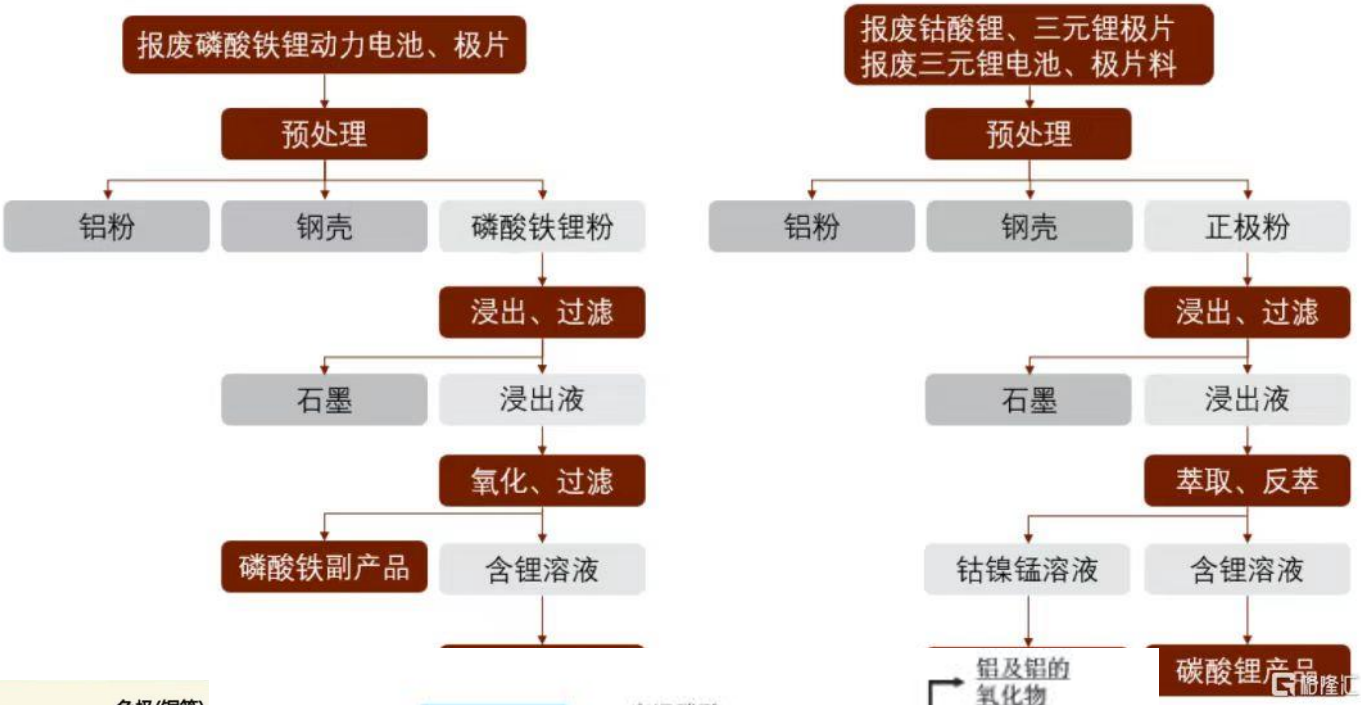
Disassembly and recycling technology

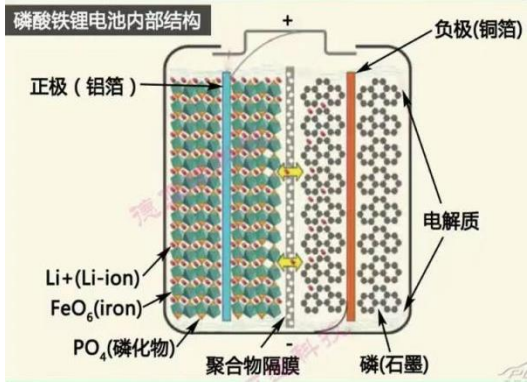
Shredding and sorting process flow

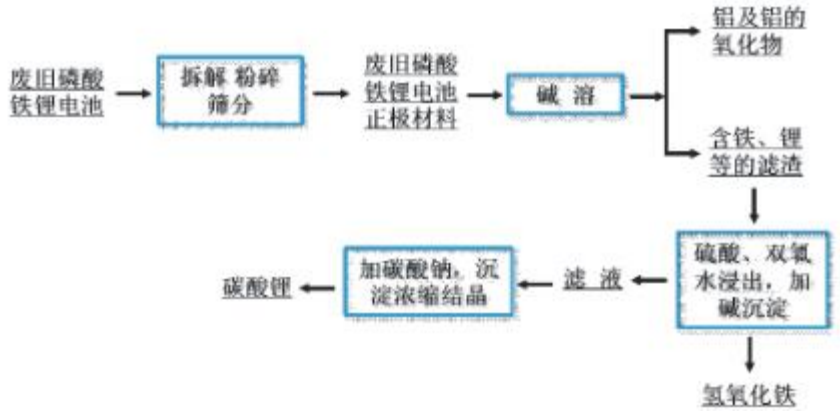


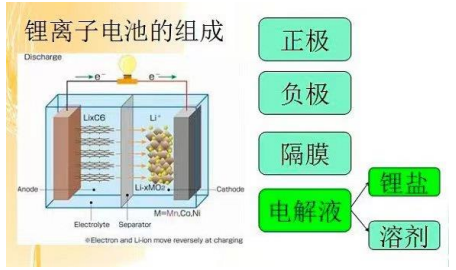
Disassembly and recycling technology

Hydrometallurgy processing flow



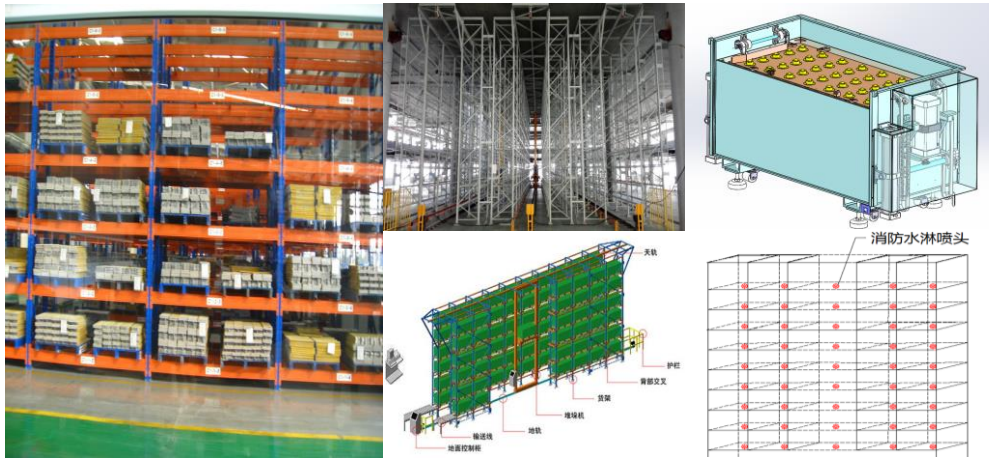






Disassembly and recycling equipment

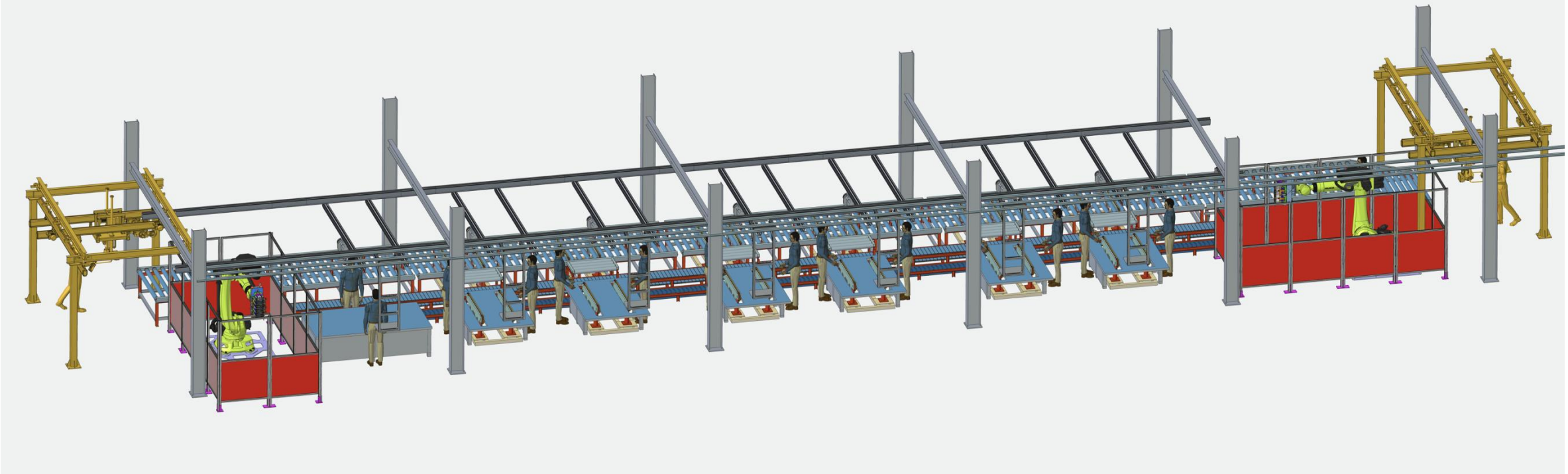
Dismantling equipment



Disassembly and recycling equipment

Cascade utilization equipment

Battery pack disassembly line

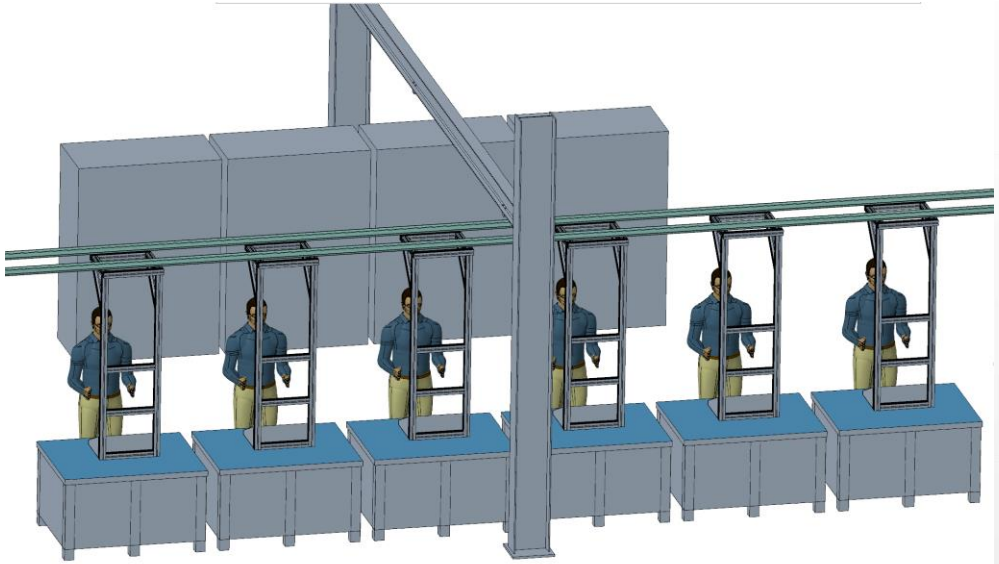


Disassembly and recycling equipment

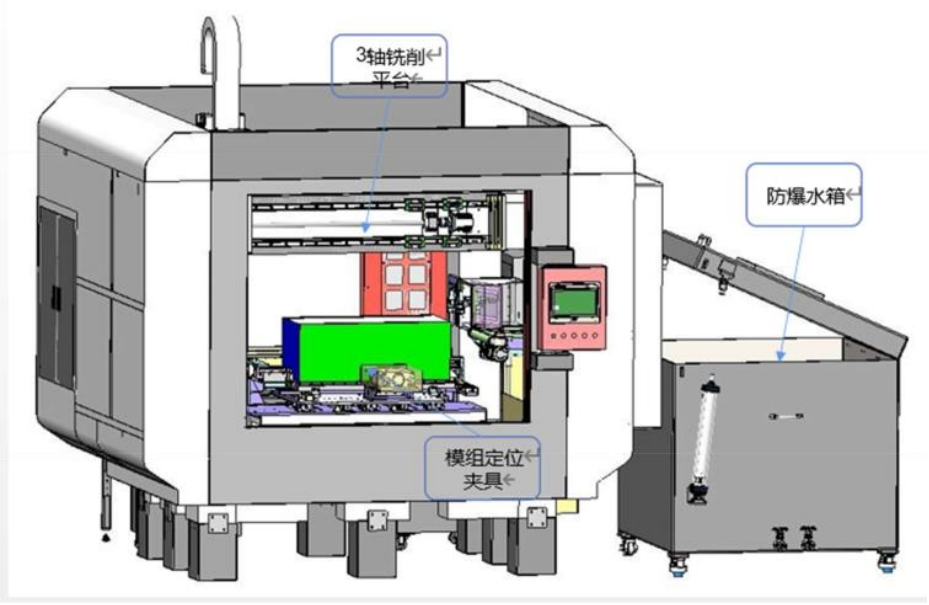
Cascade utilization equipment

Disassembly line

Module disassembly bench



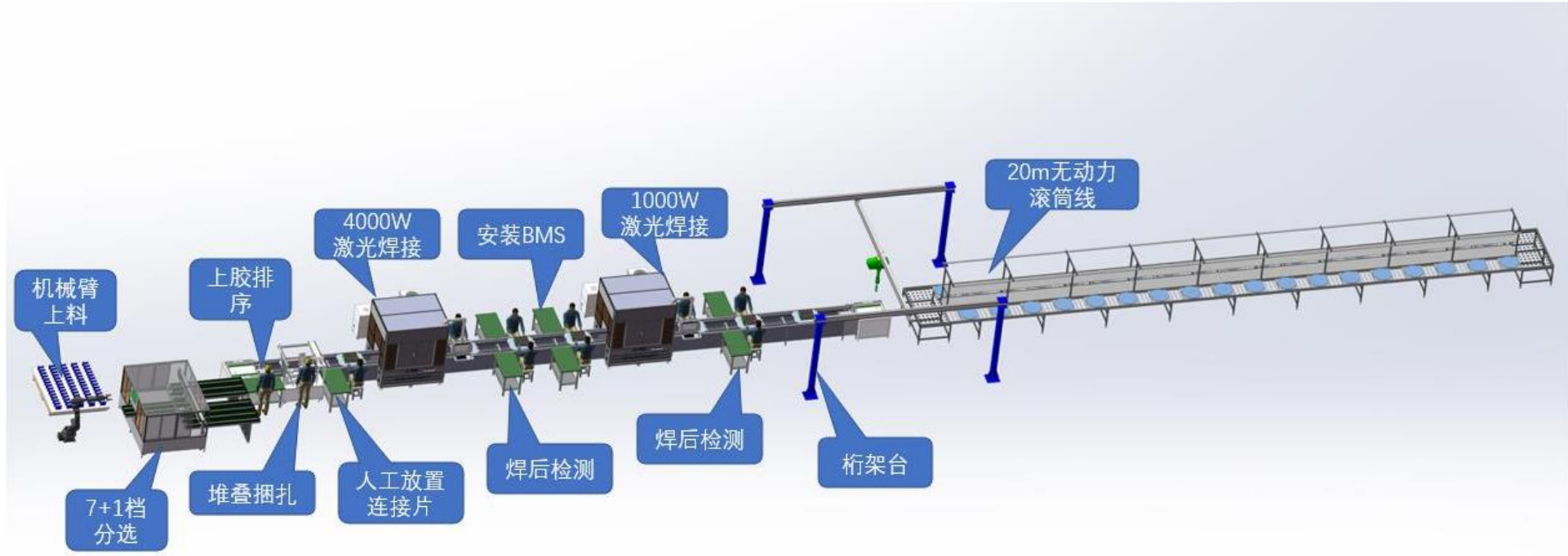
Module copper busbar milling bench



Disassembly and recycling equipment

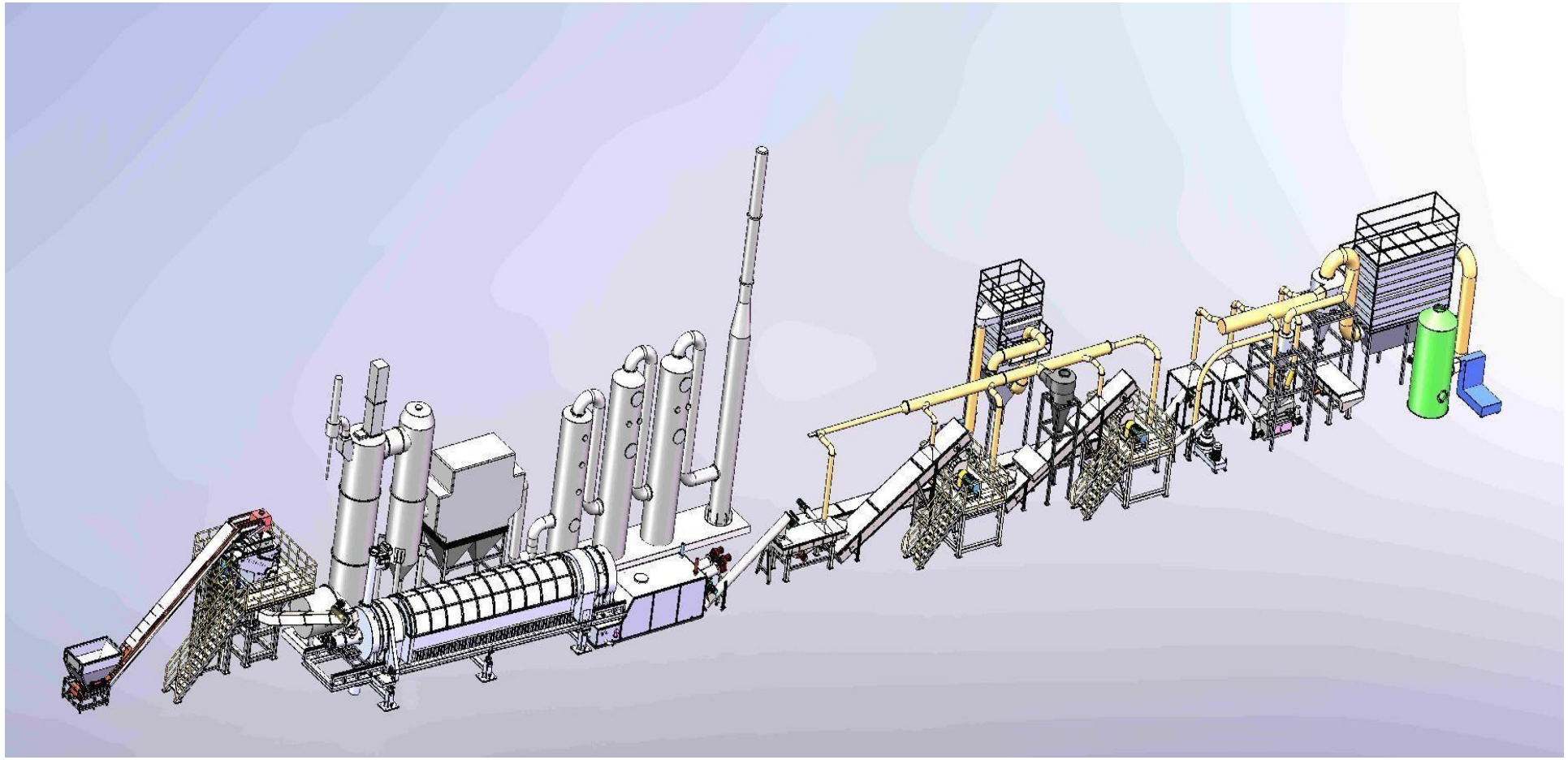
Cascade utilization equipment

The PACK assembly line



Disassembly and recycling equipment

Regeneration equipment



Disassembly and recycling pilot

Power battery removal

Disassembly and recycling pilot

Cascade utilization

Geely Motor Ningbo, Zhejiang

Disassembly and recycling pilot

Regeneration equipment

Tianqi JinTaige-Ganzhou, Jiangxi Province

Thank you very much for your attention !

For more information,
please contact: liuliu9813@163.com