BOTREE

Botree Cycling

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Founder & CEO of Botree Cycling

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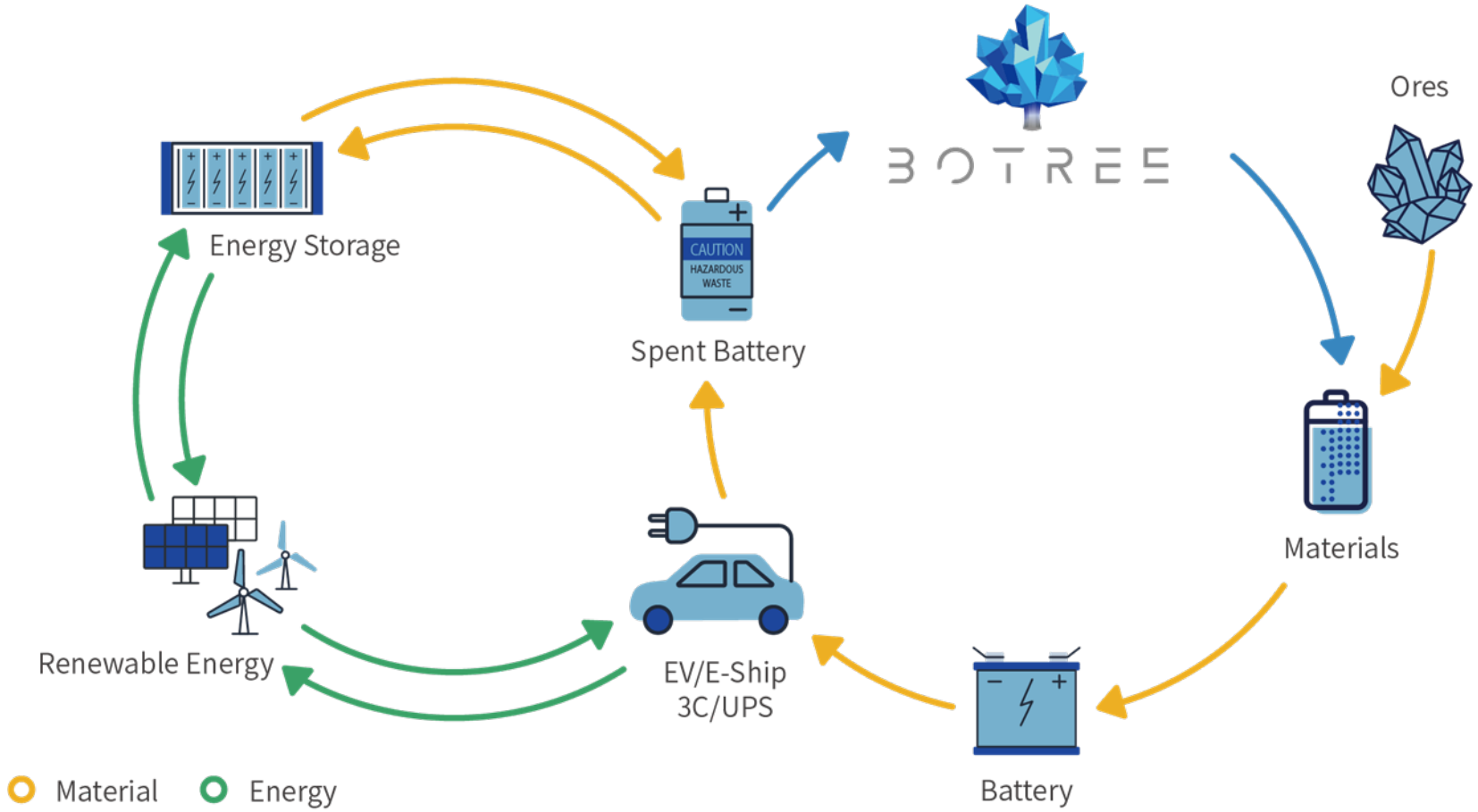
About Botree Cycling



- Pretreatment, Extraction and Separation
- Regeneration and Repair of Battery Material
- MFA/LCA/Carbon Footprint of Battery Industry Chain
- Battery bank/Battery Asset Management

Our Service

Industry/Technical Consulting

Engineering Design

Intelligent Equipment

Operation Service

Hydro process for NCM battery

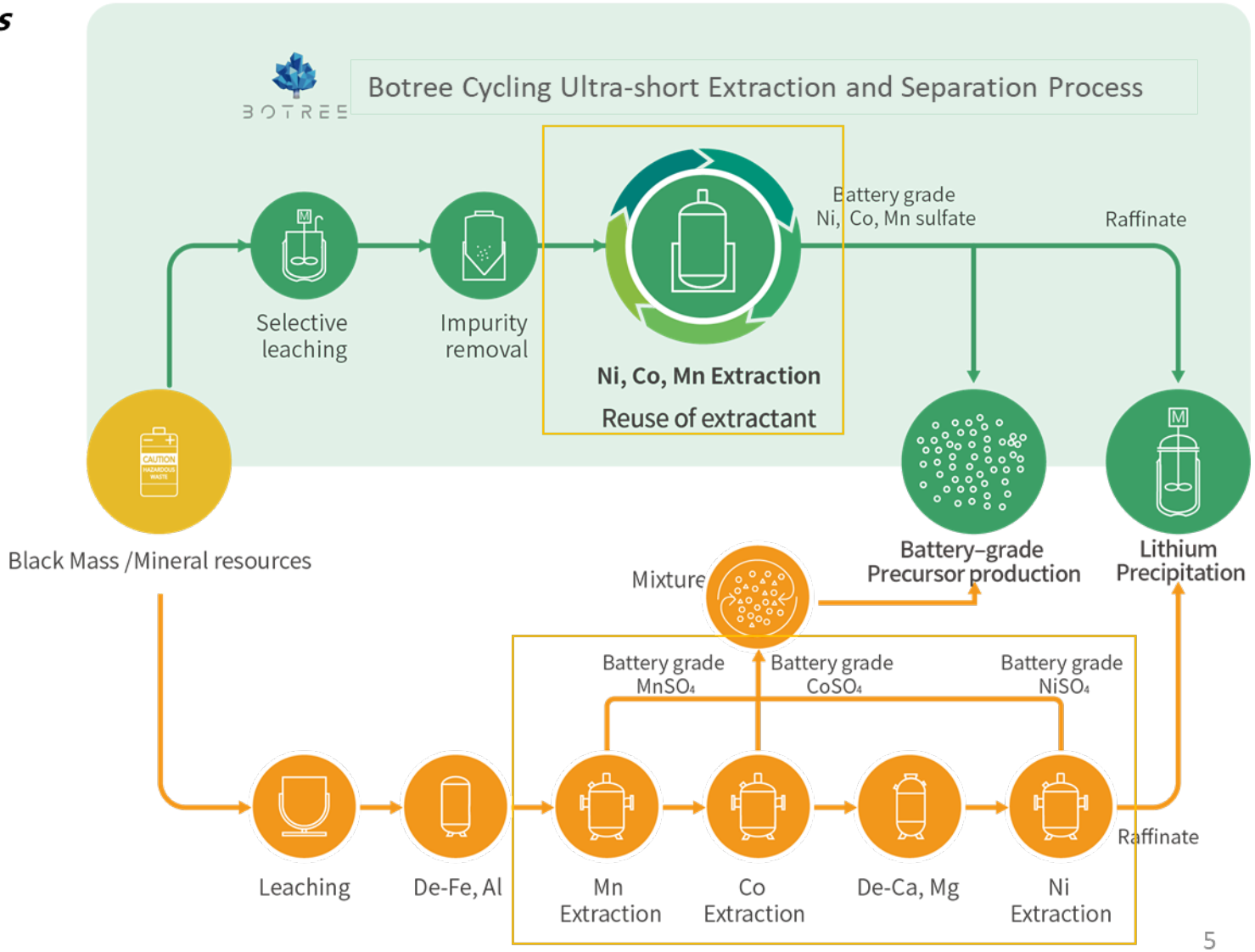
Ternary battery & Nickel-cobalt mineral resources

Recovery rate is >98.5%

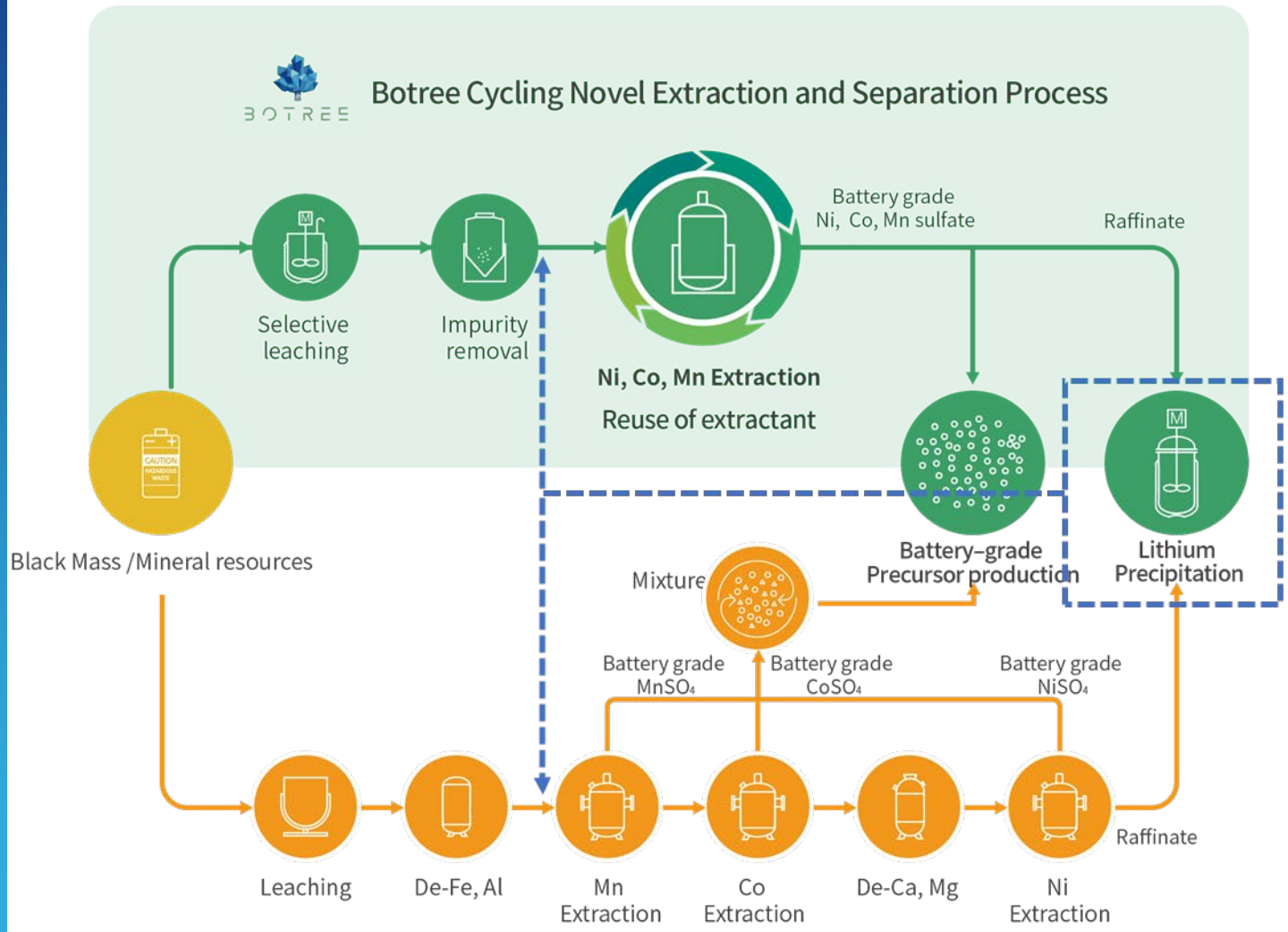
Botree Ultra-Short Process

- **Simultaneous extraction of nickel, cobalt and manganese**
- **Extraction cost is reduced by 5-20%**
- **Carbon footprint is lowered by 6-8% [1]**

[1] Under China grid mix



Pre-Extraction of Lithium

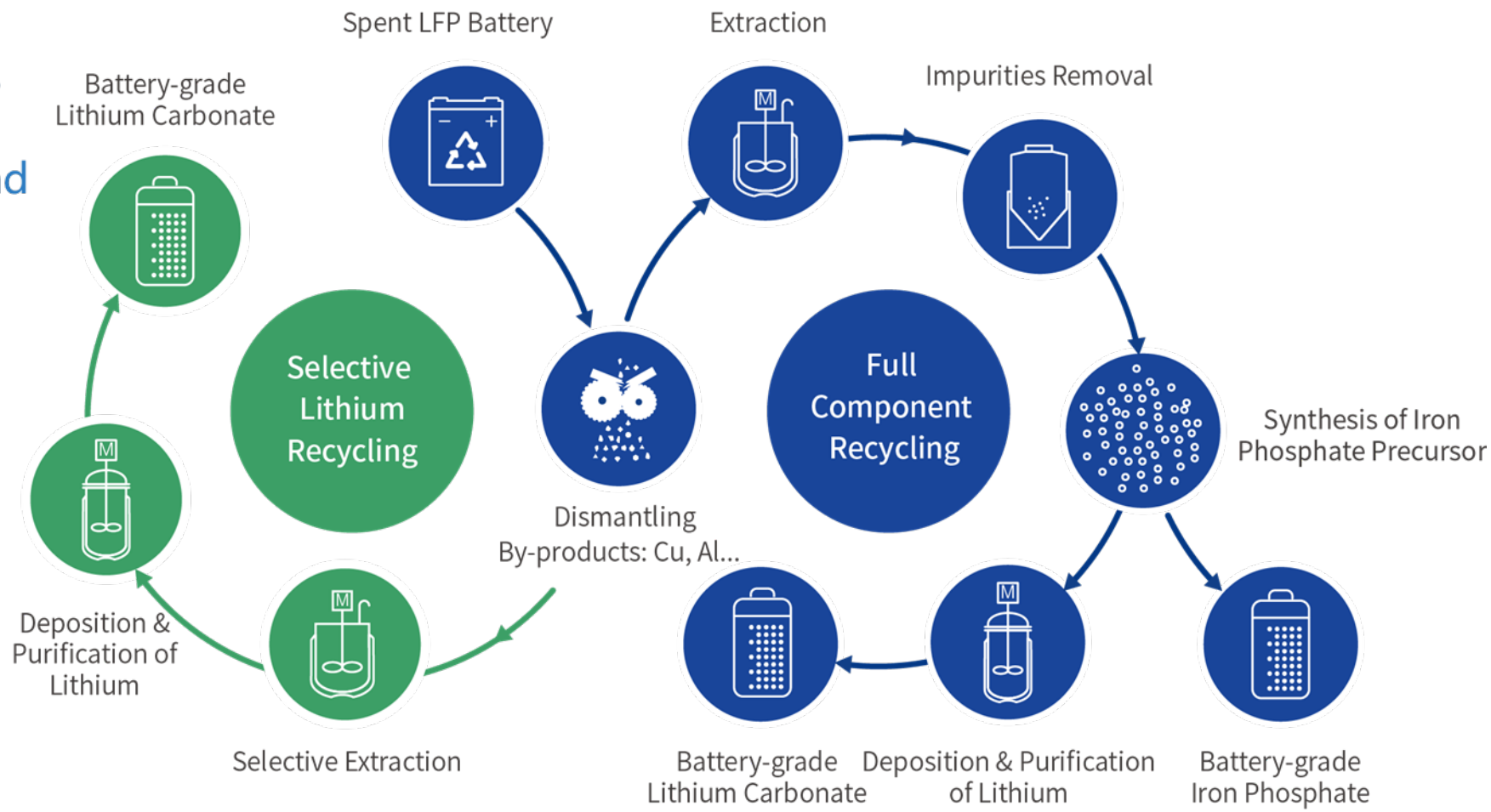


Technical features

- Li recovery ≥ 92%, Li selectivity ≥98%;
- Various input material, i.e., NMC, LCO, LMO, Li slag, Li minerals;
- Almost no loss for Ni and Co;
- Less pollution (no waste water, no solid waste)
- Low Capex and Opex

Hydro process for LFP Battery

- Recycling rate of Li>95%
- Recycling Rate of Iron and Phosphorus >90%



Equipment

Extraction Equipment

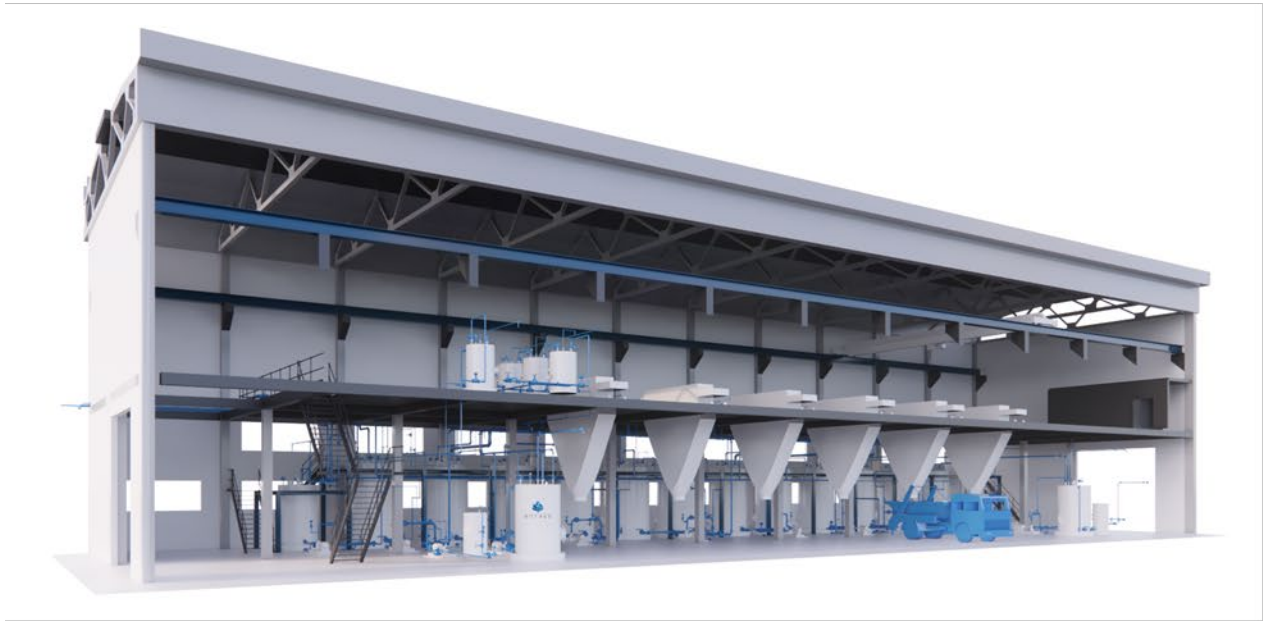
Main Advantage

- High Leaching Rate
- Low Cost
- International Standards
- Excellent Environment Performance

Separation Equipment

Main Advantage

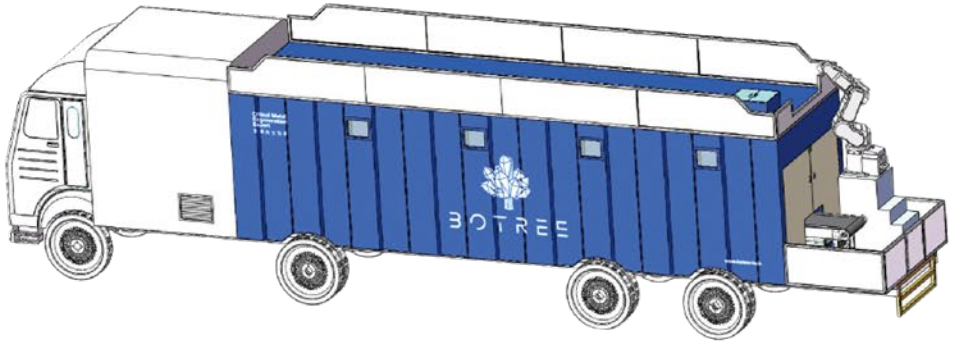
- Modularization
- Economical
- Simplified process
- Ethernet enabled smart solution



Equipment

Mobile Dismantling Equipment

- Flexible;
- Cell-crushing, exhaust gas treatment, and oxygen-free feeding integrated;
- No need to discharge;
- …

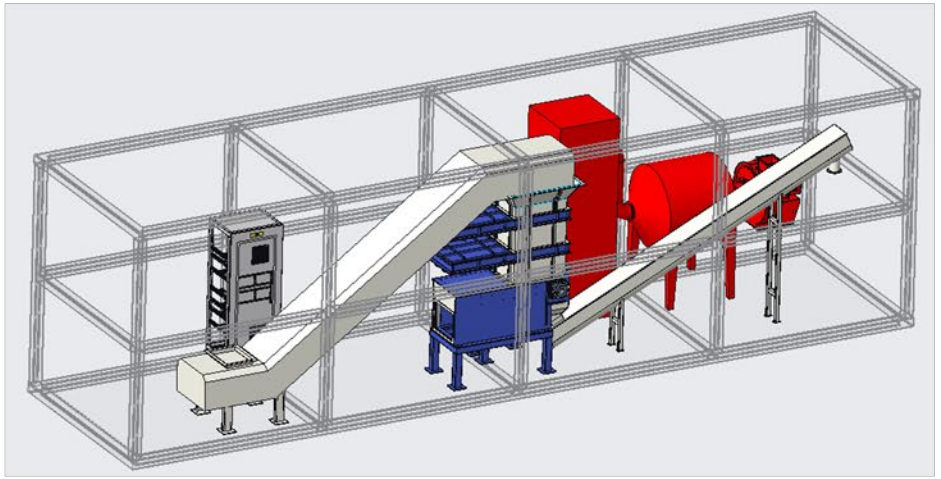


Application scenario

Energy Storage Power Stations

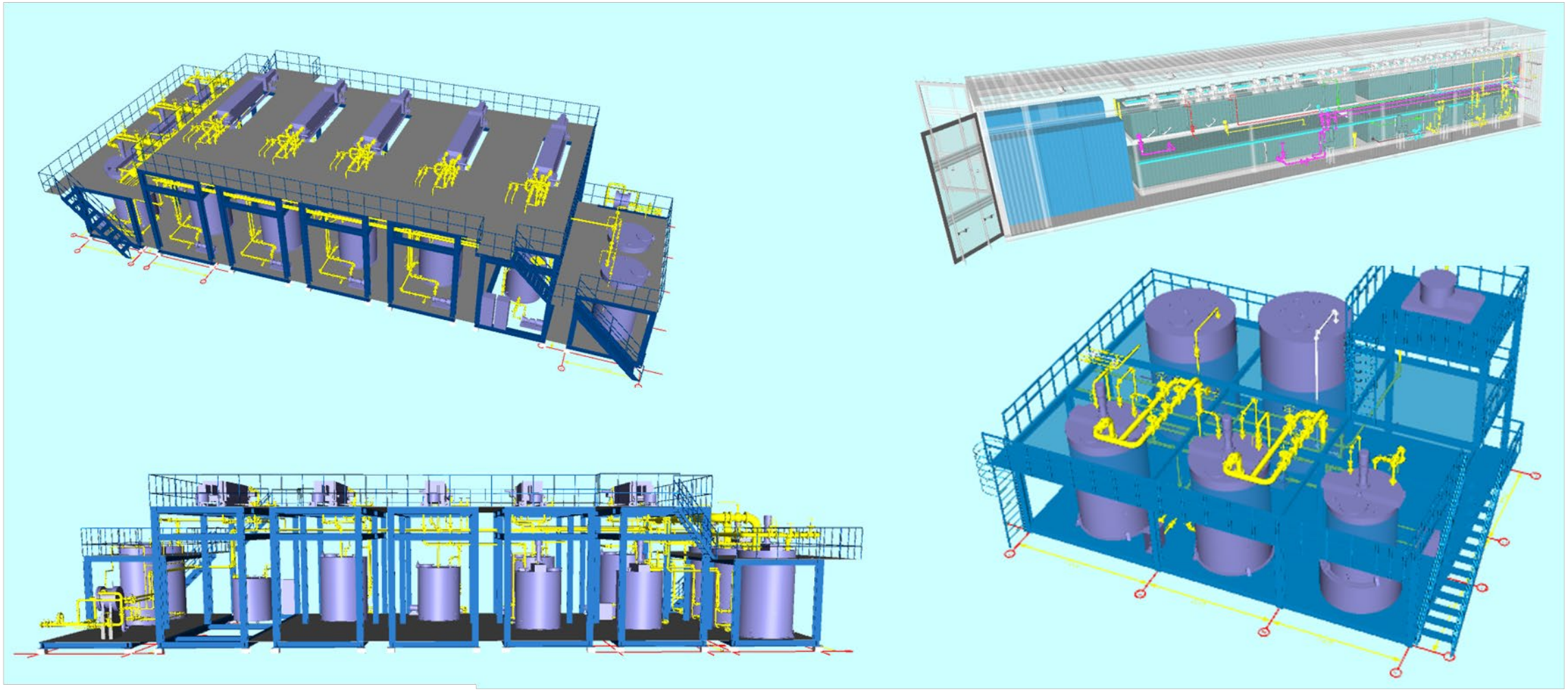
Retired E-bike center

Battery transport



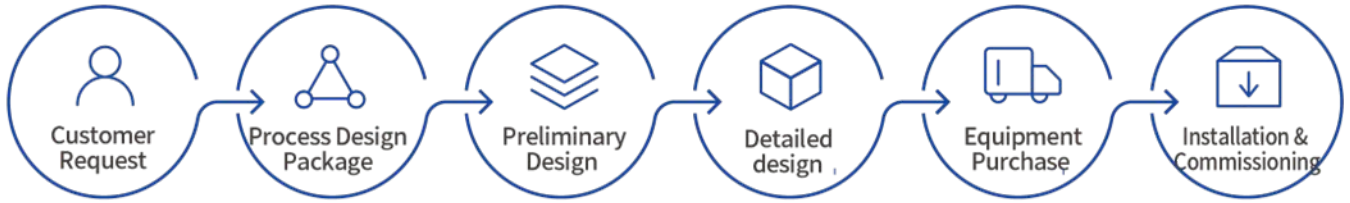
Equipment

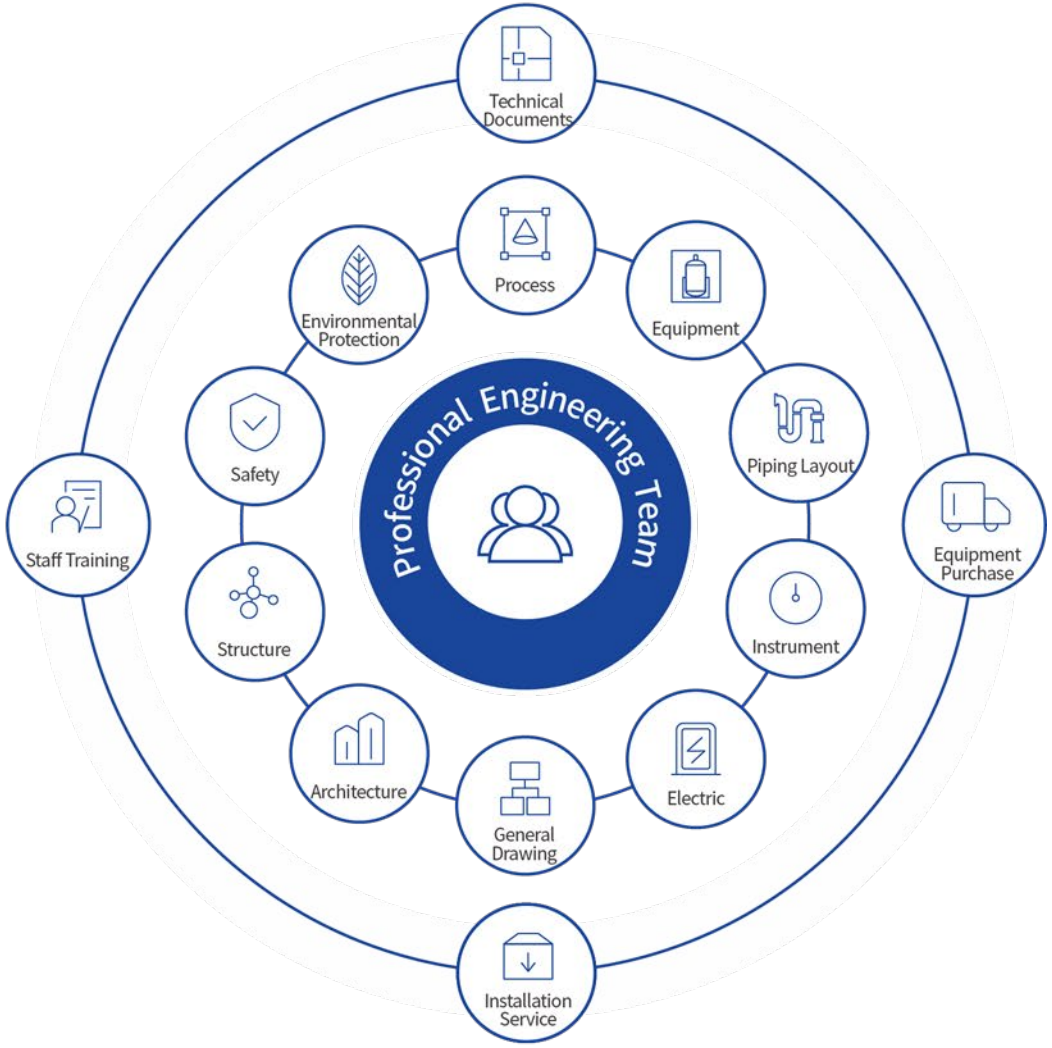
Integrated Leaching/Extraction/Lithium Precipitating Equipment (HAZOP has been completed)



Engineering Design

One-stop Engineering Service



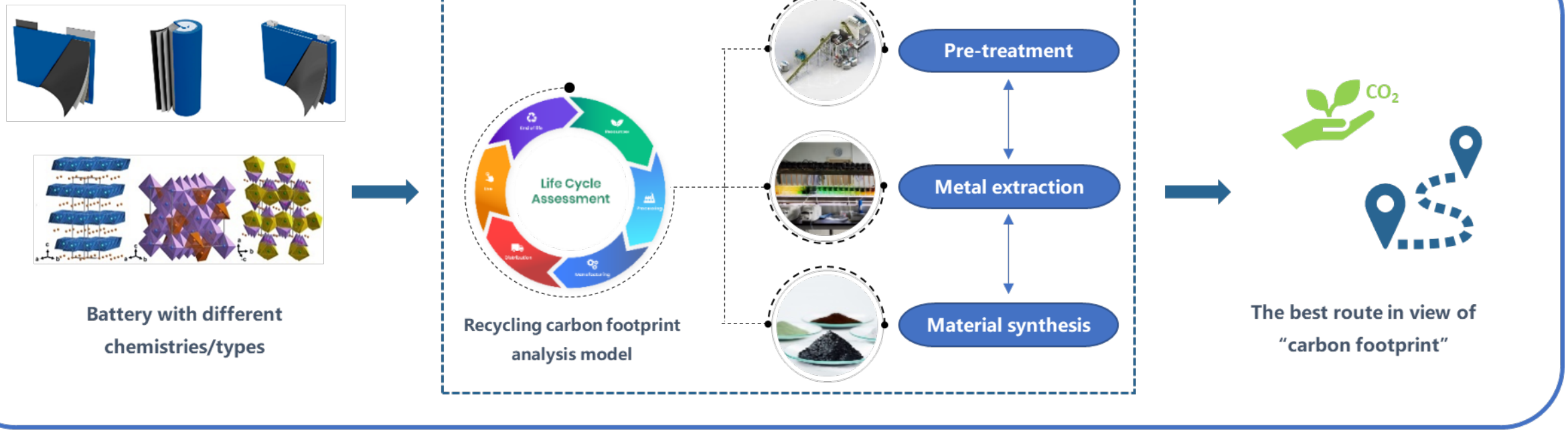


Case Study

Main upstream and downstream regions of Li-ion battery industry supply chain

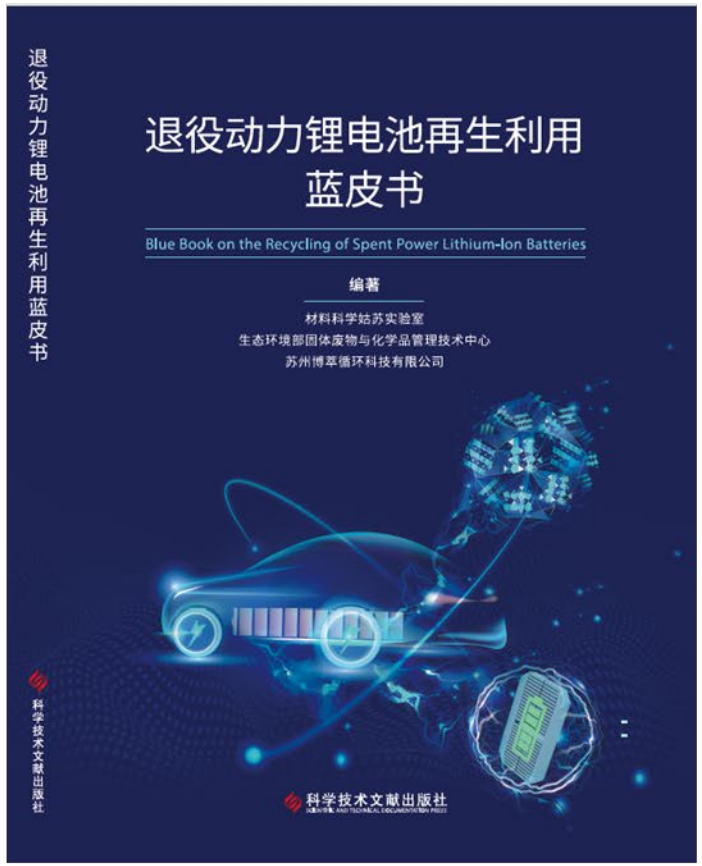
Carbon Footprint Assessment Model

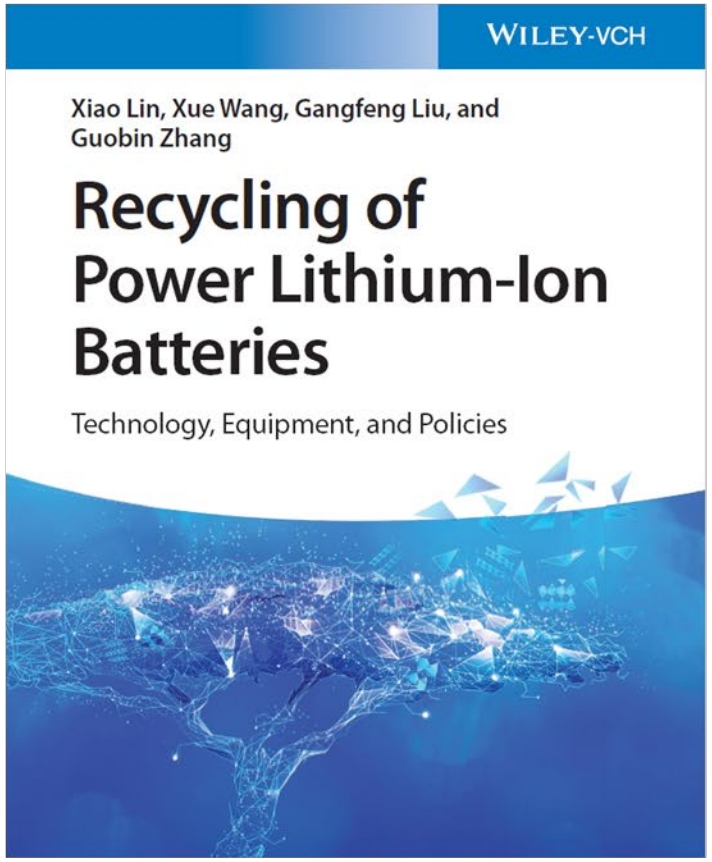
- Carbon footprint assessment models for massive recycling processes, with comprehensive onsite data and interlinked parameters
- Best recycling route selection for different battery chemistry and type input in view of carbon footprint

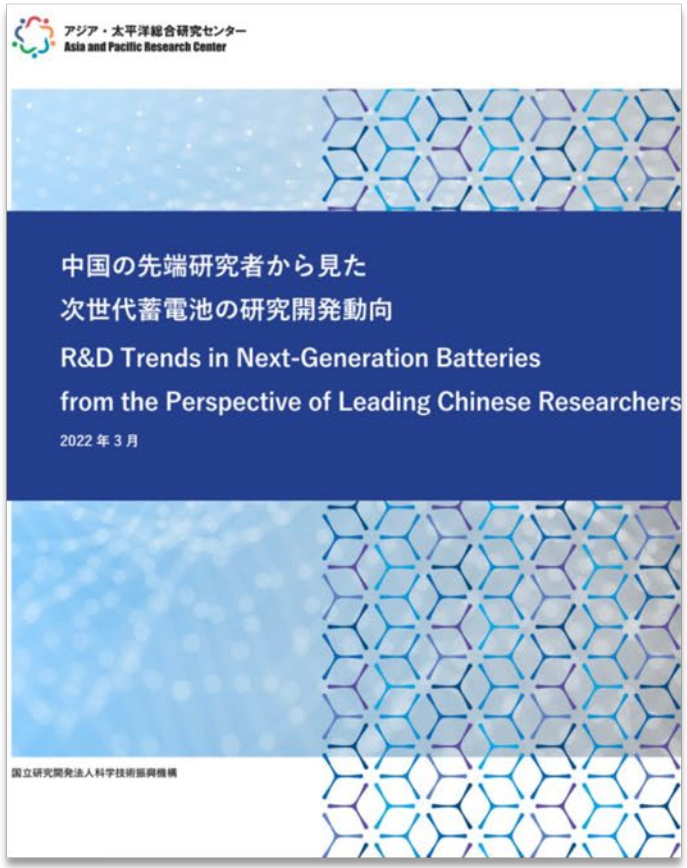


Publication

- Blue Book on the Recycling of Spent Power Lithium-Ion batteries (in Chinese)
- Recycling of Power Lithium-Ion Batteries: Technology, Equipment, and Policies (in English)
- R&D trends in Next-Generation Batteries from the Perspective of Leading Chinese Researchers (in Japanese)

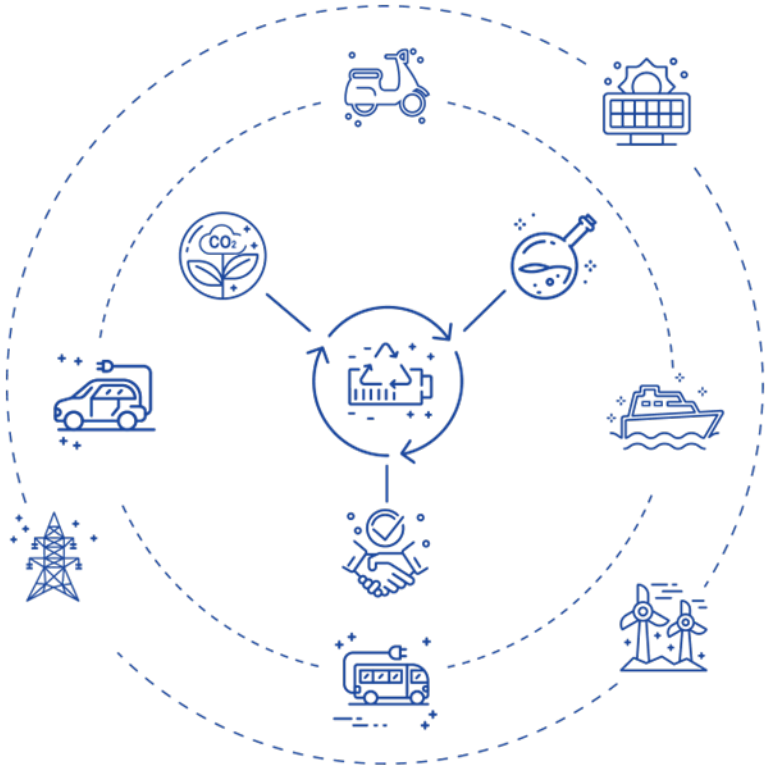






IEA HEV-TCP TASK 48 Battery Swapping

BATTERY SWAPPING



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CO-Operation Agent: *Bert Witkamp*

IEA HEV Members

Research/Agency

JOIN US!

Industry

JOIN US!

China International Battery Recycling Conference

Date: ***17-18 May 2023***

Venue: ***Shenzhen World Exhibition & Convention Center, China***

Tour: ***Huayou Cobalt, Botree Cycling, BYD, EVE***

	5.15	5.16	5.17	5.18	5.19	5.20
A			Battery Recycling Conference			
B		CIBF Exhibition				
C	Technical Visit A				Technical Visit B	
D		Opening Dinner	VIP GALA Dinner	Closed Section		

Concurrent Exhibitions

15th China International Battery Fair

Exhibition Area	Exhibitors No	Visitors No
240,000sqm	1,500+	80,000+

THANKS!

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