Circular EV Battery Value Chains

From Linear Dependency to Closed-Loop Value Creation

The rapid growth of electric vehicles has intensified demand for critical battery materials such as lithium, cobalt, and nickel—exposing manufacturers to volatile pricing, supply disruptions, and geopolitical risk. A forward-looking mobility and energy player recognized that long-term competitiveness would not come from securing more raw materials alone, but from rethinking the entire battery lifecycle—transitioning from a linear supply chain to a circular, closed-loop ecosystem.

Closed-Loop Recovery

Full material recovery integrated into production

Raw Material Dependency

Reduced reliance on volatile global markets

Regionalized Supply

Localized chains reducing geopolitical exposure

Green-Certified Supply

ESG-compliant, sustainably sourced materials

> From supply chain vulnerability to circular resource control — Fortis & Peak

Fortis & Peak
Shaping What's Next

The Strategic Challenge

The organization faced a compounding set of structural vulnerabilities that threatened both margins and long-term supply security. While it managed supply effectively in the short term, it lacked meaningful control over the full battery lifecycle—leaving it exposed at every stage from sourcing to disposal.

Price Volatility

Critical mineral price swings directly impacted margins, with no structural hedge against market fluctuations.

Geopolitical Exposure

Heavy dependence on global, geopolitically sensitive supply chains created systemic risk across procurement operations.

End-of-Life Blind Spots

Limited visibility into end-of-life battery flows meant recoverable value was consistently lost at the disposal stage.

Fragmented Recycling

Recycling and material recovery ecosystems were fragmented, with no integration between production, usage, and recycling stages.

⚠ **The organization managed supply—but lacked control over the full battery lifecycle. Without closing the loop, value leakage and risk accumulation were inevitable.**

Transformation Powered by 3D&S + FortisIntel™

Fortis & Peak deployed its proprietary 3D&S execution framework—Define, Design, Deliver, Sustain—powered by the FortisIntel™ intelligence platform to architect and activate a fully circular battery value chain. Each phase built upon the last, moving from visibility to design to live operational integration.

DEFINE

Mapped full battery value chain using FortisIntel™. Analyzed global sourcing dependencies, quantified lifecycle value-at-risk, and identified gaps between manufacturing and end-of-life recovery.

DESIGN

Engineered a closed-loop ecosystem: regional recycling networks, reverse logistics integration, recycling-to-production alignment, localization strategies, and scenario modeling for supply stability.

DELIVER

Activated the system through recycling partnerships, battery tracking, recovered material integration into supply chains, and real-time monitoring of material flows and costs.

SUSTAIN

Enabled continuous optimization of recovery rates, real-time ESG tracking, adaptive supply strategies, and capability building in circular economy operations.

Linear Model

Raw materials → Production → Use → Disposal

Circular Model

Production → Use → Collection → Recycling → Reuse

Enablers

3D&S + FortisIntel™ to design and sustain

The shift from a linear to a circular model is not merely operational—it is a fundamental redesign of how value is created, captured, and retained across the entire battery lifecycle.

Core Platforms in Action

Two proprietary platforms sit at the heart of this transformation. FortisIntel™ serves as the circular intelligence layer, while 3D&S provides the structured execution framework. Together, they convert raw data and strategic intent into measurable, operational outcomes.

FortisIntel™ — Intelligence Layer

Maps lifecycle risk, cost exposure, and material flows across the entire battery value chain. Enables scenario-based decision-making for supply chain resilience and orchestrates closed-loop ecosystems through real-time intelligence.

- **Lifecycle risk and cost exposure mapping**
- **Scenario-based supply chain decision-making**
- **Real-time closed-loop orchestration**

3D&S — Execution Framework

A four-phase methodology that transforms strategic intent into operational reality. Each phase is designed to build on the last, ensuring that circular systems are not only designed but fully activated and continuously improved.

- Define: Identify lifecycle risk and value leakage
- Design: Architect circular supply chain ecosystems
- Deliver: Activate closed-loop operations
- Sustain: Optimize and scale circular performance

Lifecycle Visibility

Full visibility into cost, risk, and value leakage across the battery lifecycle

Phases Activated

All four 3D&S phases deployed end-to-end for complete transformation

Integrated System

Procurement, operations, and sustainability functions fully aligned

Measurable Impact & Strategic Positioning

The transition to a circular battery value chain delivered tangible, measurable outcomes across cost, resilience, and sustainability dimensions—while repositioning the organization as a leader in future-ready EV supply chain management.

Cost Stabilization

Stabilized cost structure through material recovery and reuse, reducing exposure to volatile global raw material markets.

Supply Resilience

Enhanced supply chain resilience through regionalization, reducing geopolitical dependency and single-source risk.

ESG Leadership

Increased availability of green-certified materials and strengthened ESG positioning with full regulatory compliance.

> In the EV era, competitive advantage will not come from accessing materials—but from controlling and recycling them within your own ecosystem.

This engagement positions Fortis & Peak as the creator of FortisIntel™, owner of the 3D&S methodology, and a firm that transforms supply chains into circular value ecosystems—a leader in enabling sustainable, resilient, and future-ready industries.

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