EV Battery Second-Life Applications Training Course

Professional Development Training Course Outline

Category	Renewable Energy	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

EV Battery Second-Life Applications Training Course provides a practical, future-focused understanding of how electric vehicle (EV) batteries, after reaching the end of their automotive service life, can be repurposed for stationary energy storage, renewable energy integration, microgrids, backup power, commercial energy management, and smart-grid applications. As global EV adoption accelerates, battery circularity, energy transition, battery lifecycle management, resource efficiency, and the circular economy are becoming strategic priorities for manufacturers, utilities, fleet operators, energy companies, and sustainability leaders. This course explores the complete second-life value chain from battery diagnostics, State of Health (SoH), State of Charge (SoC), battery degradation, repurposing, remanufacturing, safety assessment, and module selection to system design, deployment, monitoring, and end-of-life strategies. Participants gain insights into emerging Battery Energy Storage Systems (BESS), AI-powered battery analytics, digital battery management, renewable-energy storage, and the commercial opportunities created by second-life EV batteries.

Through industry-oriented learning and real-world case studies, participants will examine how retired EV batteries can deliver additional economic and environmental value while reducing dependence on virgin raw materials and supporting net-zero, decarbonization, energy resilience, and sustainable mobility. The course connects technical concepts with business models, regulatory considerations, risk management, lifecycle economics, and operational best practices. By completing the program, learners will be better equipped to evaluate second-life battery feasibility, develop sustainable deployment strategies, identify high-value applications, and contribute to the rapidly evolving EV battery circular economy. The training is designed around practical decision-making, technology trends, digital transformation, and scalable solutions for the next generation of low-carbon energy infrastructure.

Programme Curriculum

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Course Duration

5 days

Course Objectives

1. Understand the EV battery lifecycle and the principles of battery second-life applications.
2. Evaluate State of Health (SoH), State of Charge (SoC), degradation, capacity, and remaining useful life.
3. Identify suitable EV battery chemistries, modules, and packs for second-life deployment.
4. Apply battery diagnostics and health assessment techniques for repurposing decisions.
5. Understand Battery Management Systems (BMS) and advanced battery monitoring technologies.
6. Design applications for stationary energy storage, renewable integration, microgrids, and backup power.
7. Assess battery safety, thermal management, electrical risks, and operational controls.
8. Explore AI, IoT, digital twins, predictive analytics, and smart battery management.
9. Evaluate technical, environmental, and economic feasibility of second-life projects.
10. Develop strategies for circular economy, resource efficiency, recycling, and sustainable battery value chains.
11. Analyze emerging business models, revenue streams, and total cost of ownership (TCO).
12. Examine regulatory, compliance, transportation, environmental, and end-of-life requirements.
13. Apply industry knowledge through real-world case studies, project scenarios, and implementation strategies.

Target Audience

1. EV and automotive industry professionals
2. Battery manufacturers and BMS engineers
3. Energy storage and BESS professionals
4. Renewable energy developers and operators
5. Utilities and smart-grid professionals
6. Sustainability, ESG, and circular-economy managers
7. Fleet, mobility, and EV infrastructure managers
8. Entrepreneurs, consultants, researchers, and policymakers

Course Modules

Module 1: EV Battery Lifecycle & Second-Life Fundamentals

- EV battery lifecycle management and transition from automotive to stationary applications.
- Battery degradation mechanisms, aging patterns, capacity fade, and performance loss.
- Second-life vs. reuse, repurposing, remanufacturing, and recycling.
- Circular economy principles and sustainable battery value chains.
- Case Study: Evaluating retired EV battery packs for a commercial energy-storage application.

Module 2: Battery Diagnostics, SoH & Remaining Useful Life

- Fundamentals of State of Health (SoH), State of Charge (SoC), State of Power (SoP) and capacity testing.
- Electrical, thermal, mechanical, and diagnostic assessment of used battery packs.
- Remaining Useful Life (RUL) estimation and degradation analytics.
- Battery screening, grading, module matching, and qualification criteria.
- Case Study: Using battery health data to determine whether a retired EV pack is suitable for second-life deployment.

Module 3: Battery Repurposing, BMS & System Architecture

- Battery module selection, configuration, repackaging, and system integration.
- Advanced Battery Management Systems (BMS) for second-life batteries.
- Cell balancing, monitoring, protection, communication, and fault detection.
- Thermal management and electrical integration for stationary systems.
- Case Study: Developing a second-life battery architecture for a renewable-energy microgrid.

Module 4: Second-Life Applications & Energy Storage

- Stationary energy storage for homes, commercial buildings, and industrial facilities.
- Renewable-energy integration with solar PV, wind power, and hybrid energy systems.
- EV charging infrastructure, peak shaving, load shifting, and backup power.
- Microgrids, distributed energy resources, and grid resilience.
- Case Study: Repurposed EV batteries supporting solar generation and peak-demand management.

Module 5: Battery Safety, Risk Management & Compliance

- Electrical, thermal, mechanical, and chemical hazards associated with used batteries.
- Thermal runaway prevention, detection, mitigation, and emergency response.
- Safe handling, transportation, storage, installation, and maintenance.
- Risk assessment, safety protocols, testing, and compliance considerations.
- Case Study: Creating a safety-management framework for a second-life BESS facility.

Module 6: AI, IoT & Digital Battery Intelligence

- Artificial intelligence (AI) and machine learning for battery health prediction.
- IoT-enabled battery monitoring, remote diagnostics, and real-time performance analytics.
- Digital twins for lifecycle optimization and predictive maintenance.
- Cloud-based battery data platforms and intelligent energy-management systems.
- Case Study: Applying predictive analytics to identify battery degradation and optimize system performance.

Module 7: Economics, Sustainability & Circular Business Models

- Techno-economic analysis, lifecycle cost, TCO, ROI, and payback assessment.
- Environmental benefits, carbon reduction, material recovery, and lifecycle sustainability.
- Second-life business models involving automakers, utilities, aggregators, and energy-service providers.
- ESG, net-zero, decarbonization, and circular-economy value creation.
- Case Study: Comparing a second-life BESS investment with a new battery-storage system.

Module 8: Future Trends, Recycling & Strategic Implementation

- Integration of second-life batteries with smart grids, renewable energy, and EV charging ecosystems.
- Transition pathways from second-life use to final recycling and material recovery.
- Emerging battery chemistries and implications for future second-life applications.
- Market trends, innovation opportunities, policy developments, and scalable deployment.
- Case Study: Developing a strategic roadmap for an end-to-end EV battery circular economy.

Training Methodology

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
21 Sep 2026	25 Sep 2026	Online	$1,000
21 Sep 2026	25 Sep 2026	Physical	$1,500
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0

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