Battery Manufacturing Technologies Training Course

Professional Development Training Course Outline

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

Course Introduction

The global battery industry is experiencing unprecedented growth driven by the rapid adoption of Electric Vehicles (EVs), Energy Storage Systems (ESS), renewable energy integration, and advanced lithium-ion battery technologies. As industries transition toward sustainable energy solutions, the demand for highly skilled professionals in battery manufacturing, cell design, battery pack assembly, quality assurance, and battery recycling technologies continues to rise. comprehensive Battery Manufacturing Technologies Training Course is designed to equip participants with the latest industry knowledge, practical skills, and technological expertise required to excel in the evolving battery ecosystem.

The program provides in-depth exposure to lithium-ion battery manufacturing, solid-state battery innovations, battery management systems (BMS), gigafactory operations, Industry 4.0 applications, automation technologies, and sustainable battery production practices. Participants will gain insights into global manufacturing standards, process optimization techniques, safety regulations, and emerging trends shaping the future of energy storage. Through real-world case studies and industry-focused learning modules, learners will develop competencies that support career advancement and organizational excellence in the battery manufacturing sector.

Programme Curriculum

Battery Manufacturing Technologies Training Course

Introduction

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Course Duration

5 days

Course Objectives

1. Understand advanced Lithium-Ion Battery Manufacturing Processes.
2. Analyze emerging Solid-State Battery Technologies and market trends.
3. Develop expertise in Battery Cell Design and Engineering.
4. Implement Battery Management Systems (BMS) for enhanced performance.
5. Master Gigafactory Operations and Smart Manufacturing practices.
6. Apply Industry 4.0 and Digital Twin Technologies in battery production.
7. Improve Battery Quality Control and Process Optimization techniques.
8. Learn advanced Battery Testing and Validation Methods.
9. Understand EV Battery Pack Design and Assembly methodologies.
10. Implement Battery Safety Standards and Thermal Management Systems.
11. Explore Battery Recycling and Circular Economy Solutions.
12. Evaluate Energy Storage Systems (ESS) integration opportunities.
13. Develop strategies for Sustainable Battery Manufacturing and ESG Compliance.

Target Audience

1. Battery Manufacturing Engineers
2. EV Industry Professionals
3. Production and Plant Managers
4. Quality Assurance and Testing Engineers
5. Research and Development Scientists
6. Energy Storage System Specialists
7. Automation and Industry 4.0 Professionals
8. Technical Graduates and Engineering Students

Course Modules

Module 1: Fundamentals of Battery Technologies

- Battery chemistry fundamentals
- Lithium-ion battery architecture
- Battery performance parameters
- Electrochemical principles

- Emerging battery technologies
- **Case Study:** Evolution of lithium-ion batteries in global EV manufacturing

Module 2: Battery Materials and Cell Components

- Cathode materials and innovations
- Anode technologies and advancements
- Electrolyte selection and optimization
- Separator materials and functions
- Raw material supply chain management
- **Case Study;** Material selection strategies in leading battery gigafactories

Module 3: Battery Cell Manufacturing Processes

- Electrode slurry preparation
- Coating and drying technologies
- Cell assembly techniques
- Electrolyte filling processes
- Formation and aging procedures
- **Case Study:** Process optimization in high-volume battery cell production

Module 4: Battery Pack Design and Assembly

- Cell-to-pack integration
- Module assembly techniques
- Electrical interconnection systems
- Thermal management solutions
- Structural design considerations
- **Case Study:** EV battery pack architecture and manufacturing best practices

Module 5: Battery Management Systems (BMS)

- BMS architecture and functions
- State of Charge (SOC) estimation
- State of Health (SOH) monitoring
- Battery balancing strategies
- Data analytics and predictive maintenance
- **Case Study:** AI-driven battery monitoring in electric vehicle applications

Module 6: Quality Control, Testing and Safety

- Battery quality assurance frameworks
- Electrical performance testing
- Thermal runaway prevention
- International safety standards
- Reliability and lifecycle testing
- **Case Study:** Root cause analysis of battery failure incidents

Module 7: Smart Manufacturing and Industry 4.0

- Automation in battery production
- Industrial robotics applications

- Digital twin implementation
- AI and machine learning in manufacturing
- Smart factory performance analytics
- **Case Study:** Industry 4.0 transformation in battery gigafactory operations

Module 8: Battery Recycling and Future Technologies

- Battery recycling technologies
- Circular economy principles
- Second-life battery applications
- Solid-state battery developments
- Future energy storage innovations
- **Case Study:** Sustainable battery recycling models and business opportunities

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- 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
07 Sep 2026	11 Sep 2026	Online	$1,000
07 Sep 2026	11 Sep 2026	Physical	$1,500
14 Sep 2026	18 Sep 2026	Online	$1,000
14 Sep 2026	18 Sep 2026	Physical	$1,500
21 Sep 2026	25 Sep 2026	Online	$1,000
21 Sep 2026	25 Sep 2026	Physical	$1,500
28 Sep 2026	02 Oct 2026	Online	$1,000
28 Sep 2026	02 Oct 2026	Physical	$1,500

Ready to enroll or request a customized program? Book online or contact us:

Register Online Now

Email: info@fineskilltrainingcenter.com | Website: www.fineskilltrainingcenter.com