Distributed Energy Resource Management Systems 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

Distributed Energy Resource Management Systems Training Course provides a comprehensive understanding of how utilities, grid operators, energy companies, and technology professionals can manage and optimize distributed energy resources (DERs) across increasingly decentralized and intelligent power networks. As the energy sector accelerates toward grid modernization, renewable energy integration, energy transition, smart grids, electrification, and grid-edge intelligence, DERMS has become a critical technology for coordinating solar PV, battery energy storage systems (BESS), electric vehicles (EVs), demand response, microgrids, flexible loads, and other behind-the-meter and front-of-the-meter resources. The course explores DER orchestration, real-time grid visibility, advanced distribution management, flexibility optimization, forecasting, automated demand response, distributed energy resource aggregation, and virtual power plant (VPP) integration, enabling participants to understand how DERMS can improve grid flexibility, reliability, resilience, and operational efficiency.

Through practical learning, industry scenarios, and DERMS case studies, participants will examine how intelligent energy management platforms support decarbonization, renewable integration, congestion management, voltage optimization, peak-load management, ancillary services, grid balancing, and flexibility markets. The program connects DERMS concepts with emerging technologies including AI, machine learning, IoT, edge computing, cloud energy platforms, digital twins, advanced analytics, smart meters, EV charging infrastructure, and energy storage optimization. Participants will gain the knowledge required to evaluate DERMS architectures, develop effective DER integration strategies, understand interoperability and cybersecurity requirements, and support the deployment of resilient, data-driven, and future-ready distribution grids.

Programme Curriculum

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Course Duration

5 days

Course Objectives

By the end of this training course, participants will be able to:

1. Understand DERMS architecture, functionality, and grid-edge intelligence.
2. Analyze the role of distributed energy resources (DERs) in modern power systems.
3. Apply DER orchestration and real-time DER optimization strategies.
4. Understand AI-driven forecasting, predictive analytics, and grid optimization.
5. Evaluate battery energy storage systems (BESS) for flexibility and grid support.
6. Develop strategies for solar PV, EV, demand response, and flexible-load integration.
7. Explore Virtual Power Plant (VPP) aggregation and distributed flexibility management.
8. Apply DERMS concepts to peak-load management, congestion relief, and voltage optimization.
9. Understand demand response automation and flexibility services.
10. Examine DERMS–ADMS, SCADA, EMS, GIS, and smart-meter interoperability.
11. Evaluate cybersecurity, data governance, and communications requirements for DERMS.
12. Analyze grid resilience, reliability, decarbonization, and energy-transition applications.
13. Develop practical strategies for DERMS deployment, business value creation, and future grid modernization.

Target Audience

1. Utility executives and power-sector decision makers
2. Distribution system operators and grid operations professionals

3. Electrical, power, and smart-grid engineers
4. Renewable energy and DER integration specialists
5. Energy storage and battery systems professionals
6. EV charging, demand response, and flexibility-market professionals
7. Energy technology, digital transformation, and grid modernization teams
8. Consultants, project managers, regulators, and energy-sector technology professionals

Course Modules

Module 1: DERMS Fundamentals and the Digital Energy Transition

- Distributed Energy Resources (DERs) and their role in modern electricity networks
- DERMS architecture, components, capabilities, and operational functions
- Grid modernization, smart grids, and grid-edge intelligence
- DERMS compared with ADMS, EMS, SCADA, and Energy Management Platforms
- **Case Study:** Utility deployment of DERMS to coordinate rapidly increasing rooftop solar and battery resources

Module 2: DERMS Architecture, Data, and Interoperability

- DERMS platform architecture and real-time grid visibility
- DER telemetry, communications, APIs, and data exchange
- Integration with ADMS, SCADA, GIS, OMS, EMS, AMI, and IoT platforms
- Interoperability, standards, data models, and scalable DER connectivity
- **Case Study:** Integrating smart meters, solar PV, BESS, and EV chargers into a unified DERMS environment

Module 3: DER Forecasting, AI, and Advanced Grid Analytics

- AI-driven forecasting for solar, wind, load, EV charging, and flexible demand
- Machine learning applications for DER availability and behavior prediction
- Predictive analytics for congestion, voltage, and network constraints
- Real-time situational awareness and grid-edge analytics
- Case Study: Using AI-enabled forecasting to predict solar ramps and optimize battery dispatch

Module 4: DER Orchestration, Optimization, and Grid Flexibility

- DER orchestration and automated dispatch strategies
- Active power, reactive power, voltage, and frequency support
- Flexibility optimization and constraint management
- Peak-load reduction, network congestion management, and load shifting
- Case Study: Coordinating batteries, smart thermostats, and commercial loads to reduce a distribution feeder peak

Module 5: Battery Storage, EVs, and Virtual Power Plants

- Battery Energy Storage Systems (BESS) and grid flexibility applications
- EV charging optimization and vehicle-to-grid (V2G) concepts
- Aggregation of DERs into Virtual Power Plants (VPPs)
- Ancillary services, frequency response, and flexibility markets
- Case Study: Aggregating residential batteries and EV chargers into a virtual power plant for grid support

Module 6: Demand Response and Renewable Energy Integration

- Automated demand response and flexible-load management
- Solar PV and wind integration through intelligent DER coordination
- Renewable curtailment reduction and flexibility optimization
- Distributed generation balancing and renewable intermittency management
- Case Study: Using DERMS-based demand response to accommodate high renewable penetration without major network upgrades

Module 7: DERMS Cybersecurity, Resilience, and Regulatory Considerations

- DERMS cybersecurity threats, vulnerabilities, and protection strategies
- Secure communications, identity management, access control, and data protection
- Grid resilience and continuity of operations
- Regulatory, market, compliance, and data-governance considerations
- Case Study: Developing a cybersecurity and resilience framework for a utility DERMS deployment

Module 8: DERMS Implementation, Business Value, and Future Grid

- DERMS implementation roadmap, requirements, and technology selection
- Business cases, ROI, operational efficiency, and value stacking
- Deployment challenges, change management, and stakeholder coordination
- Future trends: AI-powered grids, digital twins, autonomous grid operations, flexibility markets, and transactive energy
- Case Study: Designing a five-year DERMS roadmap for a utility transitioning toward a decentralized, resilient, and decarbonized grid

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
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

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