Utility Solar Grid Compliance 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

Utility Solar Grid Compliance Training Course equips power-sector professionals with practical knowledge to design, operate, test, and maintain utility-scale solar photovoltaic (PV) plants in alignment with grid codes, interconnection standards, power quality requirements, protection systems, cybersecurity, and renewable-energy regulations. The course focuses on the rapidly evolving requirements surrounding grid integration, inverter-based resources (IBRs), smart-grid technologies, SCADA, advanced inverter functions, frequency response, voltage control, reactive power management, fault ride-through (FRT), and system stability. Participants gain a structured understanding of how compliance requirements translate into engineering decisions, commissioning procedures, operational controls, and ongoing performance verification.

Through practical case studies, compliance scenarios, technical exercises, and utility-scale solar simulations, learners develop the ability to identify grid-code gaps, interpret interconnection requirements, evaluate plant performance, and implement effective compliance strategies. The training connects solar power generation, grid reliability, energy transition, digitalization, grid modernization, battery energy storage integration, power-system resilience, and regulatory compliance, enabling organizations to reduce connection risks, improve plant availability, strengthen grid performance, and maintain long-term compliance in increasingly complex renewable-energy networks.

Programme Curriculum

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Course Duration

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Course Objectives

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

1. Interpret utility-scale solar grid codes and interconnection requirements.
2. Apply IBR compliance principles to solar PV power plants.
3. Evaluate voltage and frequency ride-through performance.
4. Configure and assess advanced inverter functions.
5. Analyze reactive power and voltage-control requirements.
6. Evaluate power quality, harmonics, flicker, and grid disturbances.
7. Understand protection coordination and system-stability requirements.
8. Apply SCADA, telemetry, and real-time monitoring compliance practices.
9. Assess active-power control, ramp-rate, and frequency-response requirements.
10. Develop effective grid-compliance testing and commissioning procedures.
11. Identify cybersecurity and digital-grid compliance risks.
12. Evaluate compliance requirements for solar-plus-BESS hybrid plants.
13. Develop a practical grid-compliance management and continuous-monitoring strategy.

Target Audiences

1. Utility and transmission-system engineers
2. Solar PV project and electrical engineers
3. Grid-connection and interconnection specialists
4. Renewable-energy project managers
5. Protection, control, and automation engineers
6. SCADA, EMS, and grid-operations professionals
7. Independent power producers and EPC personnel
8. Regulators, consultants, and energy-sector technical advisors

Course Modules

Module 1: Utility Solar Grid-Code Fundamentals

- Grid-code architecture and regulatory frameworks

- Interconnection requirements for utility-scale PV
- Generator performance standards
- Transmission and distribution interface requirements
- **Case Study:** Grid-code compliance assessment for a 100 MW solar farm

Module 2: Grid Connection & Power-System Studies

- Interconnection study fundamentals
- Load-flow and short-circuit considerations
- Dynamic and transient-stability analysis
- Grid-strength and weak-grid conditions
- **Case Study:** Connection challenges for a solar plant connected to a weak grid

Module 3: Advanced Inverter & IBR Compliance

- Grid-following and grid-forming inverter concepts
- Voltage and frequency ride-through
- Reactive-power and voltage-control modes
- Active-power curtailment and ramp-rate control
- **Case Study:** Correcting inverter settings after failed compliance testing

Module 4: Power Quality, Protection & Stability

- Harmonics and power-quality requirements
- Flicker and voltage-disturbance assessment
- Protection coordination
- Fault-current and fault-response characteristics
- **Case Study:** Resolving protection and harmonic-compliance issues at a large PV plant

Module 5: Frequency, Voltage & Ancillary Services

- Frequency-response requirements
- Automatic generation control concepts
- Voltage regulation and reactive-power support
- Ramp-rate and active-power management
- **Case Study:** Solar plant response during a major grid-frequency event

Module 6: SCADA, Communications & Cybersecurity

- SCADA architecture and plant-controller functions
- Utility telemetry and communication requirements
- Remote-control and dispatch interfaces
- Data quality, alarms, event recording, and compliance evidence
- **Case Study:** Investigating a SCADA communication failure affecting grid compliance

Module 7: Compliance Testing, Commissioning & Verification

- Factory and site acceptance testing
- Grid-compliance test plans
- Performance verification and documentation
- Non-conformance identification and corrective actions
- **Case Study:** Commissioning a 250 MW solar facility against utility interconnection requirements

Module 8: Emerging Grid Compliance & Solar+BESS

- Solar-plus-BESS grid integration
- Grid-forming technologies and synthetic inertia
- Digital-grid monitoring and analytics
- Resilience, flexibility, and future grid-code trends
- **Case Study:** Compliance strategy for a hybrid solar-BESS power plant

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

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

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