

ENERGY STORAGE + MICROGRID

TRAINING + CERTIFICATION



ESAMTAC

Energy storage industry stakeholders have identified the need for a nationwide contractor network that has certified expertise in the safe and effective installation, commissioning, maintenance, retrofitting, and decommissioning of energy storage and microgrid equipment and systems.

The ESAMTAC initiative, led by Penn State University, is a non-profit national training and certification program based on standards and codes developed and/or approved by the National Fire Protection Association (NFPA), National Electrical Installation Standards (NEIS), National Electrical Code (NEC), American National Standards Institute (ANSI), and the Electric Power Research Institute (EPRI). ESAMTAC is supported by industry contributions and by the National Science Foundation.



40+ GW energy storage
per year installed
globally by 2022



Get trained and certified
today!

Our Partners



PennState



National
Electrical
Installation
Standards



American National Standards Institute



GridSTAR
Smart Grid Experience Center

EPRI | ELECTRIC POWER
RESEARCH INSTITUTE

Energy Storage and Microgrid Training and Certification (ESAMTAC)

ESAMTAC is an education/training program and credential that prepares electrical contractors and workers for the safe and effective assembly, testing, commissioning, maintenance, repair, retrofitting, and decommissioning of energy storage and microgrid (ESM) systems. ESAMTAC consists of two courses with exams and related credentials. The Level One course develops knowledge and skills with an emphasis on energy storage and microgrid *components*. The Level Two course builds upon the primary course with a focus on ESM *systems* and the electrical skills and safety competencies needed to manage and supervise the safe execution of the range of ESM construction activities.

For more information please visit: www.esamtac.com

Level One Course Modules

- 0: Introduction to ESAMTAC
- 1: Business Drivers
- 2: Microgrid systems and Components
- 3: ESM Storage Systems
- 4: Battery Safety
- 5: DC Theory, Devices, and Meters
- 6: ESM Control and Communication Systems
- 7: ESM Assembly Methods and Safety
- 8: Enclosures and Racks for Batteries
- 9: Installation of Batteries in Racks
- 10: Connections Between Batteries
- 11: DC Power Conductors and Connections
- 12: Grounding and Bonding of ESM systems

Level One Course Hands-on Labs

- 1.1 Microgrid Applications
- 1.2 Energy Storage Application
- 2.1 Inverter Properties
- 2.2 Micro-turbine Interconnection
- 3.1 En. Storage Chemistry and Application
- 4.1 PPE selection
- 4.2 Emergency Action Plan for Lead Acid Battery Installation
- 5.1 Wet cell battery maintenance
- 6.1 Method of Procedure
- 7.1 Hazard & Arc Fault Risk Assessment
- 8.1 Battery Systems Case Study
- 9.1 Moving Batteries into Racks
- 10.1 Making Connection Cables
- 10.2 Connecting Batteries in a Row
- 11.1 Make up Fine Twisted Strand Cable
- 11.2 DC Cable Connections
- 11.3 ESM Project Planning Analysis

Level Two Course Topics:

1. Situation Assessment of Microgrid Systems
2. Power systems communication infrastructure
3. Component parts & protocols of ESM systems
4. SCADA / interface systems
5. Operations and reset procedures
6. Cyber security networking/ Network segmentation
7. Design & code compliance / certification
8. Site controller interface and programming
9. Evaluation of monitoring data
10. Sensors and monitoring systems
11. Commissioning and testing standards
12. Advanced troubleshooting methods for BESS systems
13. O&M processes & Retrofit procedure
14. Decommissioning and recycling of ESM systems