

IESA online training on Energy Storage

Who should attend: Technical teams from Battery manufacturing companies, Solar, E-Rickshaw, Telecom, Datacentre companies, Engineers, Operation & Maintenance Technicians.

Dates: Every Wednesday spread over 8 weeks.

Time: 3:00 PM to 4:30 PM (IST)

Mode of communication: Online (Each module will be for 90 minutes).



Module 1 13th November, 2019

Understanding All Aspects of Storage Battery (Specially Lead Acid Couple)

- Operating concept of secondary battery, key components of Lead Acid batteries: Cathode & Anode / Positive & Negative plate material used & purpose / Separators & Material used / Electrolyte & its properties / container / venting system & valves.
- Various parameters & their importance: Importance of Voltage, Current & Temperature control during charge & discharge & their relation with Cyclic Life, Float Life, Capacity, AH & WH efficiency, Self-Discharge Loss.
- Protection from Premature Failure.
- Life & failure prediction & predictive maintenance.
- Question & Answer for the above session.

Module 2: 20th November, 2019

Selection, Installation, O&M and Life Prediction of Large UPS batteries

- Different types of batteries, their design difference & applications – Lead Acid: Flooded - Tubular / Flat Pasted, Sealed/ VRLA – AGM / Gel / Lead carbon / Ultra Battery / Bipolar Battery / Alkaline – NiCad / NiFe / NiMH, Lithium Ion Batteries popular types – LFP / NMC.
- Battery Capacity Calculation procedure – single & multiple cascading load.
- Some important type & routine tests for different applications for ensuring quality of battery, life and performance.
- Question & Answer for the above session.

Module 3: 27th November, 2019

Off Grid/ On Grid Solar Power Plant Batteries – System Design, Sizing, O&M and Procedure for Life Prediction & Enhancement

- Battery operation & selection in Solar & Wind solar hybrid – Micro grids – Off Grid / Hybrid, Grid Tie – Load Leveling or controlling solar power fluctuations.
- Brief discussion on system size / investment optimization by using batteries in Hybrid Systems (1) Solar + Wind + battery (2) Solar + Wind + Mains Electricity + Battery (3) Solar / Wind + Mains + D.G + Battery.
- Solar & Wind Charge Controller parameter selection for charge – discharge voltage / current profile & synchronizing multiple power inputs for maximizing battery efficiency, service life with minimum 80% of rated output.
- Evaluation of a few important type & routine test results for ensuring performance & service life.
- Some pointers on batteries used in high temperature or sub-zero temperatures.
- Typical Failure Modes in Renewable Energy applications & Trouble Shooting.

Module 4: 4th December, 2019

Traction Battery O&M, Life Prediction, Different Charging Methods & Periodic Maintenance for Ensuring Full Service Life

- Batteries for Domestic & Industrial Inverters – Understanding the Battery operation modes & selection of correct battery type.
- Guide for selecting battery make & capacity from manufacturer's brochure.
- Guide for observing in any fault during operation of inverter & battery & taking advance corrective measures with the supplier.
- A few pointers for understanding whether battery needs rectification or replacement, in case of failure.

Module 5: 11th December, 2019

Inverter Batteries – Selection & Sizing with Correct Charging systems, Fault Diagnosis, Rectification & Replacement Decision

- Large UPS system batteries for Production process or large Datacentres.
- Understanding Battery operation modes, Criticality of operations, frequency of power outages, maintenance capability, space constraints, floor loading, air circulation, heat evacuation & selection of correct battery type.
- Capability to analyze manufacturer's data on battery test results.
- A few important routine tests before procuring batteries.
- Routine preventive & predictive maintenance.
- Periodic battery balance life & replacement prediction by observing performance data during regular operation and annual maintenance.

Module 6: 18th December, 2019

E-Rickshaw & E Scooter Batteries – Selection, Sizing & Chargers, Life Enhancement, Fault Diagnosis, Rectification & Fast Charging Process

- Batteries for Electric Forklifts, Tow / Platform Trucks & Golf Carts – Battery features required for material handling uses.
- Suggested Operating mode/ usage limits and expected service life.
- Conventional taper charging process & controls.
- Importance of weekly maintenance charge.
- Newly developed - very fast charging process & opportunity charge.

Module 7 (Part A): 8th January, 2020

Power Station & Electrical Substation batteries: Selection, Installation, O&M, Life Prediction, and Fault Diagnosis & Rectification

- Large UPS system batteries for Production process or large Datacentres.
- Batteries for Utility Power Stations & Distribution Sub Stations – Critical DC backup requirement – Circuit Breakers, Emergency Oil Pump, Barring Gear.
- Types of batteries used & whether new & advanced types can be used.
- Procedure to calculate battery capacity.
- Importance of measuring state of charge on daily basis, for safety.
- Importance of finding state of health & balance life during annual maintenance.

Module 7 (Part B): 8th January, 2020

Telecom BTS batteries: Selection for Cycling or Float Application, O&M, Life Prediction & Enhancement, Fault Diagnosis & Rectification

- Mobile BTS Tower Batteries – D.C backup power supply usage pattern for tower locations with (1) Infrequent Mains Power failure (2) Frequent mains failure (3) No Electricity Grid available.
- Analyzing battery types for above, namely, lead acid VRLA/Gel/ Flooded and Lithium Ion batteries.
- Pointers for basic operation & maintenance needs for longer service life.
- Periodic battery health, balance life & replacement prediction by analyzing performance data during regular operation and annual maintenance.

Module 8: 29th January, 2020

Understanding Different Battery Designs for Various Applications – Advantage & Disadvantage – Type Versus Application

- Batteries for Electric 3 wheelers & 2 Wheelers - Understanding the use and expectations from Lithium Ion / Lead Acid Flooded and VRLA Batteries.
- Knowing the specifications of chargers used for E-Rickshaws & their problems.
- 2 & 3 wheeler vehicles – Battery type, capacity and expected range.
- Suggested usage & recharging for increasing E-Rickshaw LA battery life from present 10 months to 18 months or more.
- New fast charger for E-Rickshaw Charging stations – 80% recharge in 3.5 hours or adding 35 Km run by 65 minute charge.

Trainers:

- Rajarshi Sen, Technical Advisor, Customized Energy Solutions.
- Dr. Rahul Walawalkar, President, India Energy Storage Alliance.
- Dr. Satyajit Phadke, Manager – R&D, Customized Energy Solutions.
- Debi Prasad Dash, Executive Director, India Energy Storage Alliance.
- Sandeep Gupte, Director-Business Development, Customized Energy Solutions.
- Dr. Tanmay Sarkar, Sr. Consultant, Customized Energy Solutions.

Registration:

- IESA members: Free
- IESA non-members: Each module can be attended with a price of ₹2,499 + taxes / \$49 and ₹14,999 + taxes / \$399
- 10% discount on 2 registrations. 25% discount on 5 registrations.

For registration contact:

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For more information, please visit www.indiaesa.info