

Training and Education Department Training Course Description

Stationary Battery Basics Seminar



Course Name

Stationary Battery Basics

Course Length

2 Days

Delivery Options

Customer "In-House" - 25 persons max

Public Seminars – Columbus, Ohio

Cost

\$8500

\$600 per person

Course Description

Alber has been conducting its well-known seminar, *Stationary Battery Basics* for over 25 years and has helped thousands of people learn more about their batteries so they can improve the reliability of their mission critical systems. The seminar begins with the fundamentals of batteries and explains their electrochemical characteristics in a way that makes the learning process easy. On day one, we will also cover subjects including types of lead-acid batteries, construction, selection, causes for failure and electrical ratings of batteries. Once the fundamentals have been covered in day one, day two deals directly with what owners, users, field technicians and engineers need to know about installing, operating and maintaining their batteries. As the seminar progresses, a chapter on capacity testing is presented that takes the mystery out of discharge testing batteries and relates how industry standards apply to proper testing procedures. The seminar wraps up day two with a presentation and discussion about ohmic testing, which has become very popular in recent years. Measurement of battery cell internal resistance, conductance and impedance are discussed and the way these ohmic measurements are made. In total, five chapters are presented over the two day period.

Our instructors have extensive knowledge and experience in a variety of applications and can usually answer all questions directed to them, help students with application-specific problems that ultimately help them to improve system reliability. Our instructors have a combined experience of 60+ years in the battery industry.

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Stationary Battery Basics can be delivered two ways. First, Alber offers 4 seminars per year to the general public. Seminars are offered in Columbus, Ohio at a local hotel meeting facility on a quarterly basis. Attendees make their own travel arrangements and usually stay in the hotel where the seminar is held. Tuition is based on the customer's enrollment date relative to the seminar date.

Tuition is \$600 per person. A continental breakfast and lunch is provided each day at public seminars. Enroll today!

Alternatively, Alber can come to *your* facility and conduct the seminar exclusively for *your* employees. This is called an "in-house" seminar. There is a flat fee of \$8500 and covers all seminar materials as well as refreshments as described above. Alber will coordinate refreshments with the customer prior to the seminar. *Attendance for in-house seminars is limited to 25 people.*

Each student is provided with a complete set of handout materials. Alber issues 1.6 CEU's (continuing education units) to all attendees who complete the two-day seminar. Certificates are mailed within 30 days of the seminar. The student must attend the entire seminar to qualify for CEU's.

Stationary Battery Basics Seminar Course Outline Course time – 2 days

Chapter 1 – Day 1

- Battery Applications
- Electrochemistry Basics
- Types of Plates and Grid Materials
- Battery Selection Criteria
- Battery Construction
- Understanding Battery Life
- Voltage and Current Terminology
- Premature Battery Failure and Causes
- Major Failure Modes
- Battery Racks and Stands
- Understanding the Electrical Ratings of a Battery

Continues...



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Chapter 2 – Day 2

- Safety & Training Note
- IEEE Stationary Battery Committee
- Delivery inspection
- Storage considerations
- Spill containment
- Assembly and loading of racks
- Cell handling techniques
- Making cell-to-cell connections

Chapter 2 – Day 2

- Interisle, interrack and intertier cable groups
- Verifying connection integrity
- Commissioning
- Documentation
- Battery cleaning
- Acceptance testing

Chapter 3 – Day 2

- Goals of a Maintenance Program
- Specific Recommendations
- IEEE Standards
- What Needs to be Done
- Safety
- Battery Disconnects
- Conditions Affecting Service Life
- Failure Modes
- Preventing System Failures
- Flooded Battery Visual Inspection Criteria
- Internal Resistance Measurements Case Study
- Failures of Monoblock Batteries and Resistance
- Water Additions
- Benefits of Proper Maintenance
- Example Battery Readings in Interpretation

Continues...

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Chapter 4 – Day 2

- Defining Capacity Tests
- Why Testing is Needed
- Who Recommends Testing
- Defining Battery Capacity
- Types of Tests
- Equipment Requirements
- How the Testing Process Works
- Calculation of Battery Capacity

Chapter 5 – Day 2

- Understanding Ohmic Measurements
- Schematic of a Lead-Acid Cell
- Measurement Methods
- Detection of Cell Problems
- Ohmic Problems and Cell Performance
- Metallic vs. Electrochemical Problems
- Problem Evaluation
- Measurement Intervals