

Training and Education Department Training Course Description

Stationary Battery Basics



Course Name

Stationary Battery Basics

Course Length

Two days

Delivery Options

Pompano Beach Training Center.....	N/A
Customer "In-House" - 25 persons max.....	\$8500
Public – Web schedule	See text below

Cost

Course Description

Alber has been conducting its well-known seminar, *Stationary Battery Basics*, for nearly 25 years. This seminar 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 the electrochemical characteristics of lead-acid batteries in a way that makes the learning process easy.

Day One covers subjects such as types of lead-acid batteries, construction, selection, causes for failure, and electrical ratings of batteries. After the fundamentals have been covered, Day Two deals directly with what owners, users, field technicians, and engineers need to know about installing, operating, and maintaining their batteries. A chapter on capacity testing takes the mystery out of discharge-testing batteries and relates how industry standards apply to proper testing procedures. The seminar concludes with a presentation and discussion about ohmic testing, which has become quite popular in recent years. Measurement of resistance, conductance, and impedance and the way these ohmic measurements work is discussed. In total, five chapters are presented over the two day period.

With over 60 years of combined experience in the battery industry, our instructors have extensive knowledge in a variety of applications. They can usually answer all questions and help students resolve application-specific problems, so the students can ultimately improve the reliability of their systems.

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Stationary Battery Basics is offered two ways. First, Alber offers four seminars per year to the general public. These quarterly seminars in Columbus, Ohio are held at a local hotel meeting facility. Attendees make their own travel arrangements and usually stay in the hotel where the seminar is held. Each student is provided with a complete set of handout materials, and a continental breakfast and lunch are provided each day.

The tuition fee is based on the customer's registration date relative to the seminar date. Tuition is \$500 per person if registered more than 30 days from seminar start; \$600 per person if registered 7 to 30 days before; and \$775 per person when registering fewer than 7 days prior to seminar start. Enroll early and save!

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

A total of 1.6 CEU's (Continuing Education Units) are awarded on the certificate of completion. Certificates are mailed within 30 days after the seminar. The student must attend the entire seminar to qualify for CEU's.

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Stationary Battery Basics Seminar
Course Outline

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

Chapter 2 – Day 2

- Safety and 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
- Inter-aisle, inter-rack, and inter-tier cable groups
- Verifying connection integrity
- Commissioning
- Documentation
- Battery cleaning
- Acceptance testing

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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 monobloc batteries and resistance
- Water additions
- Benefits of proper maintenance
- Example battery readings in interpretation

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

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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