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IEEE Std 1188-1996

IEEE Recommended Practice for Maintenance, Testing, and Replacement of Valve-Regulated Lead-Acid (VRLA) Batteries for Stationary Applications

Sponsor

**IEEE Standards Coordinating Committee 29
on Stationary Batteries**

Approved 20 June 1996

IEEE Standards Board

Abstract: Maintenance, test schedules, and testing procedures that can be used to optimize the life and performance of valve-regulated lead-acid (VRLA) batteries for stationary applications are covered. Guidance to determine when batteries should be replaced is also provided.

Keywords: acceptance test, battery capacity, battery maintenance, battery testing, corrective action, float voltage, inspection, internal ohmic measurements, maintenance, performance test, precautions, protective equipment, recombinant, ripple current, state-of-charge, stationary batteries, test procedures, test schedules, thermal runaway, valve-regulated lead-acid (VRLA) batteries

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Introduction

[This introduction is not a part of IEEE Std 1188-1996, IEEE Recommended Practice for Maintenance, Testing, and Replacement of Valve-Regulated Lead-Acid (VRLA) Batteries for Stationary Applications.]

Stationary lead-acid batteries play an ever increasing role in industry today by providing backup power for a wide range of applications. IEEE Std 450-1995 has provided the users with standard practices for battery maintenance, testing, and replacement for vented batteries. With the introduction of the valve-regulated lead-acid (VRLA) battery several years ago, there are unique characteristics that are not covered by the existing documents. This recommended practice fulfils the need within industry to provide common or standard practices for battery maintenance, testing, and replacement of VRLA batteries for stationary applications.

This recommended practice may be used separately, and when combined with IEEE Std 1187-1996, IEEE Std 1189-1996, and IEEE Std 485-1983, will provide the user with a general guide to selection, sizing, designing, installing, and testing a VRLA battery installation.

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IEEE Recommended Practice for Maintenance, Testing, and Replacement of Valve-Regulated Lead-Acid (VRLA) Batteries for Stationary Applications

1. Scope

This recommended practice is limited to maintenance, test schedules, and testing procedures that can be used to optimize the life and performance of valve-regulated lead-acid (VRLA) batteries for stationary applications. It also provides guidance to determine when batteries should be replaced. There are other maintenance/test procedures and replacement techniques used within the industry (especially for smaller VRLA batteries) that are equally as effective but are beyond the scope of this recommended practice. The user must consider their particular application and recent developments in the state-of-the-art when using this recommended practice. Users are cautioned to be aware of the wide variance of practices that exist in the industry for this new technology.

The portions of this recommended practice that specifically relate to personnel safety are mandatory instructions and are designated by the word *shall*; all other portions are recommended practices and are designated by the word *should*.

This recommended practice does not include any other component of the dc system, nor surveillance and testing of the dc system, even though the battery is part of that system.

Sizing, installation, qualification, selection criteria, other battery types, and application are also beyond the scope of this recommended practice.

2. References

This recommended practice shall be used in conjunction with the following publications:

IEEE Std 100-1992, The New IEEE Standard Dictionary of Electrical and Electronics Terms (ANSI).¹

¹IEEE publications are available from the Institute of Electrical and Electronics Engineers, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331, USA.