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IEEE Recommended Practice for Installation Design and Installation of Vented Lead-Acid Batteries for Stationary Applications

IEEE Power and Energy Society

Developed by the
Energy Storage and Stationary Battery Committee

IEEE Std 484™-2019
(Revision of IEEE Std 484-2002)

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Approved 7 November 2019

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Abstract: Recommended design practices and procedures for storage, location, mounting, ventilation, instrumentation, preassembly, assembly, and charging of vented lead-acid batteries are provided. Required safety practices are also included. These recommended practices are applicable to all stationary applications. Specific applications, such as emergency lighting units, semiportable equipment, and alternate energy applications, may have other appropriate practices and are beyond the scope of this recommended practice.

Keywords: alarms, assembly, data collection, float operation, flooded cellunits, freshening charge, installation design criteria, IEEE 484™, installation procedures, instrumentation, internal ohmic measurements, mounting, precautions, protective equipment, receiving and storage, resistance readings, seismic, testing, vented lead-acid batteries, ventilation

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Introduction

This introduction is not part of IEEE Std 484-2019, IEEE Recommended Practice for Installation Design and Installation of Vented Lead-Acid Batteries for Stationary Applications.

This recommended practice fulfills the need within the industry to provide common or standard practices for the design of battery installations and the battery installation procedures. The methods described are applicable to installations and battery sizes using vented lead-acid batteries. The installations considered herein are designed for float operation with a battery charger serving to maintain the battery in a charged condition as well as to supply the normal dc load.

This recommended practice may be used separately, or combined with IEEE Std 450,[1] IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications, and IEEE Std 485™, IEEE Recommended Practice for Sizing Lead-Acid Batteries for Stationary Applications, will provide the user with a general guide to sizing, designing, placing in service, maintaining, and testing a vented lead-acid battery installation. As a recommended practice, this document presents procedures and positions preferred by the IEEE.

[1]Information on references can be found in Clause 2.

Contents

IEEE Recommended Practice for Installation Design and Installation of Vented Lead-Acid Batteries for Stationary Applications

1. Overview

1.1 Scope

This recommended practice provides recommended design practices and procedures for storage, location, mounting, ventilation, instrumentation, preassembly, assembly, and charging of vented lead-acid batteries. Required safety practices are also included. This recommended practice is applicable to full-float stationary applications where a battery charger normally maintains the battery fully charged and supplies the direct current (dc) loads. However, specific applications, such as emergency lighting units, semiportable equipment, and alternate energy applications, may have other appropriate practices that are beyond the scope of this recommended practice.

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

Sizing, maintenance, capacity testing, charging equipment, dry-charged units, and consideration of other types of batteries are beyond the scope of this recommended practice.

1.2 Purpose

This recommended practice provides a general format for the preparation of test procedures and suggests the points to be considered by technical committees in the preparation of specific instructions for the thermal evaluation of insulation systems for electrical equipment.

The thermal evaluation of an insulation system involves the following thermal factors of influence:

a) Exposure temperature

b) Ambient temperature

c) Temperature gradient

d) Rate of temperature change