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Contents

1. Overview 12
1.1 Scope 12
1.2 Purpose 12
1.3 Exclusions 13
1.4 Word usage 13
1.5 Document organization 14

2. Normative references 14

3. Definitions, acronyms, and abbreviations 14
3.1 Definitions 14
3.2 Acronyms and abbreviations 15

4. Battery safety hazards and considerations 18

5. Fundamentals 19
5.1 Battery types 19
5.2 Installation enclosure applications 22

6. Heating, ventilation, and air conditioning 25
6.1 General 25
6.2 HVAC design for performance 25
6.3 HVAC design for safety 29

7. Environmental design 32
7.1 General 32
7.2 Operating modes 32
7.3 Heating, ventilating, and air-conditioning system design requirements 45
7.4 HVAC system design for ventilation 47
7.5 Integrated battery areas 50
7.6 Controls and alarms 50
7.7 Battery room hazard classification 52
7.8 Battery enclosure design 52

8. Economics 53
8.1 General 53
8.2 Battery replacement factors 53
8.3 Relative importance of the installation 53
8.4 Reliability of the HVAC system 54
8.5 Availability of maintenance resources 54
8.6 Cost and availability of battery replacement 54
8.7 HVAC System control based on battery operating mode 54

9. Environmental management (operation and maintenance) 54
9.1 Battery system operation and maintenance 54
9.2 HVAC system operation and maintenance 55

Annex A (informative) Hydrogen generation in lead-acid and nickel-cadmium batteries 57
A.1 Purpose 57
A.2 Gassing equations for lead-acid batteries 57
A.3 Sample gassing calculations for vented lead-calcium batteries 68

Preview

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A.4 Sample gassing calculations for lead-calcium-tin VRLA batteries 70
A.5 Sample gassing calculations for vented lead-antimony batteries 71
A.6 Battery gassing calculations for Ni-Cd batteries 73
A.7 Sample gassing calculations for Ni-Cd batteries 77

Annex B (informative) Heat generation in batteries 80
B.1 Purpose 80
B.2 Basics of battery heat generation 80
B.3 Sample battery heat generation calculations for vented lead-acid batteries 103
B.4 Sample heat generation calculations for lead-calcium tin VRLA batteries 105
B.5 Sample heat generation calculations for Ni-Cd batteries 107
B.6 Sample heat generation calculations for Li-ion batteries 108

Annex C (informative) Existing U.S. codes and standards 111

Annex D (informative) Explosive and toxic gas allowance considerations 113
D.1 Permissible hydrogen and other combustible gas concentrations 113
D.2 Permissible hydrogen sulfide concentrations and responsive actions 114
D.3 Permissible arsine and stibine concentrations 115
D.4 Permissible concentrations of toxic gasses produced by Li-ion thermal runaway 116

Annex E (informative) Aqueous battery thermal runaway 119
E.1 Lead-acid battery thermal runaway 119
E.2 Thermal runaway in Ni-Cd batteries 120
E.3 Li-ion battery thermal runaway 121

Annex F (informative) Sample HVAC calculations 123
F.1 Heat and hydrogen generation sample calculations 123
F.2 Cooling 124
F.3 Ventilation/Exhaust 124

Annex G (informative) Example battery data sheets 125
G.1 General 125
G.2 Long or medium duration lead-acid battery data sheet examples 125
G.3 High rate lead-acid battery data sheet examples 126
G.4 Ni-Cd battery data sheet example 130
G.5 Li-ion battery data sheet example 131

Annex H (informative) Li-ion battery fires/explosions, fire control, and venting 132
H.1 Experience with Li-ion BESS fires 132
H.2 Types of water suppression systems for Li-ion battery spaces 132

Annex I (informative) Bibliography 134

Preview

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IEEE/ASHRAE Guide for the Ventilation and Thermal Management of Batteries for Stationary Applications

1. Overview

1.1 Scope

This guide discusses the ventilation and thermal management of stationary battery systems as applied to the following:

- Vented (flooded) lead-acid (VLA)
- Valve-regulated lead-acid (VRLA)
- Vented nickel-cadmium (Ni-Cd)
- Partially recombinant vented nickel-cadmium
- Lithium ion (Li-ion)

For each category, both the technology and the design of the battery are described in order to facilitate user understanding of the environmental issues associated with each type of technology.

The scope of this document includes only stationary batteries under conditions of expected use. Multiple operating modes are identified, including failure modes.

The ventilation practices described in this guide represent the “best practice” based on the information available at the time this document was developed. The user should evaluate these practices against their operating experience, operating conditions, number and size of battery systems, manufacturer’s recommendations, resources, and needs in developing an environment that is conducive to safety and optimum operation of the equipment. These recommendations were developed without consideration of economics, availability of equipment and personnel, or relative importance of the application. Design of a ventilation system for a specific battery installation requires consideration of all issues, not just the technical issues considered in this document.

1.2 Purpose

The purpose of this document is to provide heating, ventilation, and air conditioning (HVAC) and battery system designers and users with information and recommendations concerning the ventilation and thermal management of stationary battery installations.

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