



Public Comment No. 9-NFPA 110-2023 [Section No. 3.3.12]

3.3.12 Nickel Cadmium Battery (NiCd or Ni-Cd)

A ~~secondary cell~~ rechargeable battery consisting of one or more cells in which the active material of the positive electrode is nickel ~~oxyhydroxide oxide hydroxide~~, the active material of the negative electrode is metallic cadmium, and the electrolyte is ~~dilute~~ potassium hydroxide.

Statement of Problem and Substantiation for Public Comment

Changed the word “secondary” to “rechargeable”, as that is more commonly understood, and added “one or more cells”, as that is included in the basic definition of a battery.

Related Item

- FR 2-NFPA

Submitter Information Verification

Submitter Full Name: Timothy Windey
Organization: Cummins Power Generation
Street Address:
City:
State:
Zip:
Submission Date: Wed May 31 11:00:24 EDT 2023
Committee: EPS-AAA

Committee Statement

Committee Action: Rejected but see related SR
Resolution: [SR-1-NFPA 110-2023](#)
Statement: The word “secondary” to “rechargeable”, was changed as that is more commonly understood. “One or more cells”, was added as that is included in the basic definition of a battery. The material descriptions were tweaked for the positive and negative electrodes to be consistent with terms used for current technology. The electrolyte description was edited to not include the concentration of potassium hydroxide that’s used, as the term “dilute” in front of “potassium hydroxide” is vague.



Public Comment No. 5-NFPA 110-2023 [Section No. 3.3.16.2]

3.3.16.2 Bypass-Isolation Switch.

A manual, non-automatic or automatic device used in conjunction with a transfer switch to provide a means of bypass that directly connects the load conductors to a power source and allows the transfer switch to be isolated or disconnected.

Additional Proposed Changes

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
110_CN1.pdf	110_CN1	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 1 appeared in the First Draft Report on First Revisions No. 4, and is also related to Public Input No. 12.

The term "sufficient" should be reviewed for compliance with the NFPA Manual of Style regarding the use of possibly vague and unenforceable terms. See Table 2.2.2.3.

Related Item

- First Revision No. 4

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC

Organization: NEC Correlating Committee

Street Address:

City:

State:

Zip:

Submittal Date: Mon May 22 11:39:54 EDT 2023

Committee: EPS-AAA

Committee Statement

Committee Action: Rejected

Resolution: The term "sufficient" does not appear in the definition.



Public Comment No. 1-NFPA 110-2023 [Section No. 8.1.3]

8.1.3

Reliability-centered maintenance shall be permitted ~~provided that it is in accordance with 8.1.1.~~

Statement of Problem and Substantiation for Public Comment

Reliability-centered maintenance (RCM) is a maintenance strategy that analyzes structures, systems and assets (SSAs), defines its true design function (i.e., what it is supposed to do for the organization), and determines its risk and/or criticality to the organization and operation of the facility. Manufacturers do not prescribe methods for RCM nor do they have instruction manuals for the strategy. In some instances, the RCM strategy may be to have a replacement part on hand and run to fail, recognizing that in some situations, the maintenance may be more destructive than the replacement. In other situations, careful analysis and monitoring is used to determine the appropriate frequencies for maintenance. Reliability centered maintenance is used where infrastructure is critical to the continuity of the business such as the airline industry, it's extremely important to include this management strategy for critical business such as health care.

Related Item

- PI-20

Submitter Information Verification

Submitter Full Name: David Lockhart

Organization: Kaiser Hosp

Street Address:

City:

State:

Zip:

Submittal Date: Wed May 10 12:06:46 EDT 2023

Committee: EPS-AAA

Committee Statement

Committee Action: Rejected but see related SR

Resolution: [SR-2-NFPA 110-2023](#)

Statement: The elimination of the reference to 8.1.1 is to provide clarity that it is not needed to follow the requirements of 8.1.1 specifically. The annex material given provides more detailed guidance as to what strategies should be considered and utilized when adopting a RCM program.



Public Comment No. 13-NFPA 110-2023 [Section No. 8.1.3]

8.1.3

Reliability-centered maintenance shall be permitted- provided that it is in accordance with 8.1.1.

Statement of Problem and Substantiation for Public Comment

This causes a loop. RCM is a maintenance decision strategy that deviates from 8.1.1 based on facility and asset specific data, such as Failure Modes and Effects Analysis FMEA, oil analysis, vibration analysis, etc. I recommend that a definition is added for RCM that aligns with the ASHE Reliability Centered Maintenance Handbook or other industry standard.

Related Item

- FR20

Submitter Information Verification

Submitter Full Name: Joshua Brackett
Organization: Banner Health
Street Address:
City:
State:
Zip:
Submittal Date: Wed May 31 19:05:31 EDT 2023
Committee: EPS-AAA

Committee Statement

Committee Action: Rejected but see related SR
Resolution: [SR-2-NFPA 110-2023](#)
Statement: The elimination of the reference to 8.1.1 is to provide clarity that it is not needed to follow the requirements of 8.1.1 specifically. The annex material given provides more detailed guidance as to what strategies should be considered and utilized when adopting a RCM program.



Public Comment No. 6-NFPA 110-2023 [Section No. 8.1.3]

8.1.3

Reliability-centered maintenance shall be permitted provided that it is in accordance with 8.1.1.

Additional Proposed Changes

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
110_CN2.pdf	110_CN2	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 2 appeared in the First Draft Report on First Revisions No. 20.

The order of the sentence should be reviewed for clarity in respect to where the phrase "shall be permitted" is located.

Related Item

- First Revision No. 20

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submission Date: Mon May 22 11:42:56 EDT 2023
Committee: EPS-AAA

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-2-NFPA 110-2023
Statement: The elimination of the reference to 8.1.1 is to provide clarity that it is not needed to follow the requirements of 8.1.1 specifically. The annex material given provides more detailed guidance as to what strategies should be considered and utilized when adopting a RCM program.



Public Comment No. 10-NFPA 110-2023 [Section No. 8.3.6.1.1]

8.3.6.1.1

~~Non-maintenance-free batteries shall be tested monthly for electrolyte-specific gravity or other maintenance practices as required for the battery type~~ Lead acid batteries that are maintainable (have access to the electrolyte) shall include monthly testing and recording of the electrolyte specific gravity. Battery testing methods as indicated in 8.3.6.1.2 shall be permitted in lieu of the testing of specific gravity when applicable or warranted .

Statement of Problem and Substantiation for Public Comment

Changed “non-maintenance free” to “maintainable” to clarify the language and avoid confusion of a double negative. Also added language to clarify that the battery test methods in 8.3.6.1.2 can be used with “maintainable” and “non-maintainable” batteries.

Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
<u>Public Comment No. 11-NFPA 110-2023 [Section No. 8.3.6.1.2]</u>	
<u>Public Comment No. 11-NFPA 110-2023 [Section No. 8.3.6.1.2]</u>	

Related Item

- FR 14-NFPA

Submitter Information Verification

Submitter Full Name: Timothy Windey
Organization: Cummins Power Generation
Street Address:
City:
State:
Zip:
Submittal Date: Wed May 31 11:12:40 EDT 2023
Committee: EPS-AAA

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-3-NFPA 110-2023
Statement: “Non-maintenance free” was changed to “maintainable” to clarify the language and avoid confusion of a double negative. Language was added to clarify that the battery test methods in 8.3.6.1.2 can be used with “maintainable” and “non-maintainable” batteries.



Public Comment No. 11-NFPA 110-2023 [Section No. 8.3.6.1.2]

8.3.6.1.2*

~~Maintenance-free batteries shall be tested monthly using one-~~ Lead acid batteries that are not maintainable (no access to the electrolyte) shall include monthly testing and data recording using one or more of the following methods:

- (1) ~~Battery conductance testing~~ Conductance testing (using electronic test equipment)
- (2) Ohmic testing (using electronic test equipment)
- (3) Carbon pile load testing
- (4)* ~~Cranking voltage drop testing~~ Engine cranking testing to monitor voltage drop per the generator set manufacturer's controller algorithms or voltage limit specifications.

Statement of Problem and Substantiation for Public Comment

Changed “maintenance free” to “not maintainable” to clarify the language. For (4), added clarity for cranking testing, so people will know that for each generator model, they should use the manufacturer’s pre-programmed control algorithm (or published voltage limits specifications) when conducting this test.

Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
Public Comment No. 10-NFPA 110-2023 [Section No. 8.3.6.1.1]	
Public Comment No. 10-NFPA 110-2023 [Section No. 8.3.6.1.1]	

Related Item

- FR 14-NFPA

Submitter Information Verification

Submitter Full Name: Timothy Windey
Organization: Cummins Power Generation
Street Address:
City:
State:
Zip:
Submittal Date: Wed May 31 11:20:44 EDT 2023
Committee: EPS-AAA

Committee Statement

Committee Action: Rejected but see related SR
Resolution: [SR-8-NFPA 110-2023](#)
Statement: "Maintenance free" was changed to "not maintainable" to clarify the language.
 The term “appropriate” is deleted from the annex to remove ambiguity.



Public Comment No. 12-NFPA 110-2023 [Section No. 8.4.2.1.1 [Excluding any Sub-Sections]]

Diesel generators shall be exercised using one of the following methods:

- (1) Loading that maintains the minimum exhaust gas temperatures as recommended by the manufacturer
- (2) Under operating temperature conditions and at not less than 30 percent of the EPS standby nameplate kW rating (unless lower load level is permitted by manufacturer's recommendation).

Statement of Problem and Substantiation for Public Comment

Modern high pressure common rail injection systems in many diesel engine platforms no longer need 30% or higher loads to prevent "wet stacking" issues. This requirement should allow for the manufacturer's recommendation for specific engines if lower loads levels are permissible.

Related Item

- PI 38-NFPA

Submitter Information Verification

Submitter Full Name: Timothy Windey
Organization: Cummins Power Generation
Street Address:
City:
State:
Zip:
Submission Date: Wed May 31 11:39:43 EDT 2023
Committee: EPS-AAA

Committee Statement

Committee Action: Rejected
Resolution: While certain engines may be less susceptible to wet-stacking at low loads, there is no major OEM reference listed to support a change that would otherwise complicate the AHJs review of a given application.



Public Comment No. 4-NFPA 110-2023 [Section No. A.4.1]

A.4.1

This standard provides the performance requirements for an EPSS as a complete functioning system in terms of types, classes, and levels. This standard does not include recommendations for the EPSS most suitable for any given application. The term *emergency power supply systems* is the focus of this standard and includes such systems as those found in *NFPA 70*, Article 700, Article 701, and Article 708, as well as the emergency systems found in *NFPA 99* and *NFPA 70*, Article 517.

~~The term standby A power supply system refers to the connection in some systems where a generator, for example, that is used to supply both an emergency power system and an optional power system. The requirements in this standard apply to these systems. is considered an emergency power system.~~

Because this standard specifies the installation, performance, maintenance, and test requirements in terms of types, classes, and levels, any of these terms might be appropriate for describing its application or use depending on the needs and preferences of the parties involved.

Statement of Problem and Substantiation for Public Comment

A generator that supplies BOTH optional standby power AND emergency power is by definition an emergency power system and the requirements of NFPA 110 apply irrespective of the optional standby connections. The existing annex sentence implies the term standby is suitable when a power system has both standby and emergency loads, but that is incorrect. The standard is suitable for all emergency power systems, whether mixed with optional standby or not, but it is not accurate to identify such systems as "standby."

Related Item

- PI37

Submitter Information Verification

Submitter Full Name: Richard Kluge

Organization: Ericsson

Affiliation: ATIS

Street Address:

City:

State:

Zip:

Submission Date: Thu May 11 10:45:15 EDT 2023

Committee: EPS-AAA

Committee Statement

Committee Action: Rejected but see related SR

Action:

Resolution: SR-5-NFPA 110-2023

Statement: A generator that supplies BOTH optional standby power AND emergency power is by definition an emergency power system and the requirements of NFPA 110 apply irrespective of the optional standby applications. The existing annex sentence implies the term standby is suitable when a power system has both standby and emergency loads, but that is vague. The standard is suitable for all emergency power systems, whether mixed with optional standby or not, but it is not accurate to identify such systems as "standby."



Public Comment No. 7-NFPA 110-2023 [Section No. A.8.3.6.1.2]

A.8.3.6.1.2

Priority should be given to the education and training of individuals regarding potential safety hazards when choosing the appropriate battery test.

Additional Proposed Changes

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
110_CN3.pdf	110_CN3	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 3 appeared in the First Draft Report on First Revisions No. 14.

The use of the term "appropriate" in A.8.3.6.1.2 should be reviewed for lack of specificity in respect to the battery test.

Related Item

- First Revision No. 14

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Mon May 22 11:45:28 EDT 2023
Committee: EPS-AAA

Committee Statement

Committee Action: Rejected but see related SR
Resolution: [SR-8-NFPA 110-2023](#)
Statement: "Maintenance free" was changed to "not maintainable" to clarify the language.
 The term "appropriate" is deleted from the annex to remove ambiguity.