



NATIONAL FIRE PROTECTION ASSOCIATION

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AGENDA

NFPA Technical Committee on Ovens and Furnaces (OVE-AAA) NFPA 86 Second Draft Meeting (A2026)

August 12-14, 2025
1:00 p.m. – 4:00 p.m. (Eastern)

Web/Teleconference

To join the meeting, please contact Sarah Caldwell (scaldwell@nfpa.org)

1. **Call to order.** Franklin Switzer.
2. **Introductions.** See committee roster attached.
3. **Chair report.** Franklin Switzer.
4. **Staff liaison report.** Alex Ing.
5. **Previous meeting minutes.** October Lake Buena Vista, FL. See attached.
6. **NFPA 86 Second Draft.**
 - a. **Public Comments.** See attached.
 - b. **Task group report(s).**
 - i. **Class A Oven.** Saoirse George.
 - ii. **Fundamentals and Class B Ovens.** Ted Jablkowski.
 - iii. **Class C Ovens.** Andrew Stoeckle.
 - iv. **Explosion Relief.** Scott Johnston.
 - v. **Flame Propagation.** Daniel Ertl.
 - vi. **Sediment Trap.** Robert Sanderson.
 - vii. **Overpressure Protection Device.** Kevin Carlisle. See PC 2
 - viii. **Oven Cleaning.** Geoffrey Raifsnider. See PC 4, 5
 - ix. **Positive Interlock Testing Method.** Jeremy Conjura. See PC 3
 - x. **Oxidizer Commissioning Operations.** Richard Martin.
 - c. **Committee Inputs.** See attached.
7. **Other Business.**
8. **Future meetings.**
9. **Adjournment.**

Address List No Phone

07/01/2025

Heath Dehn

OVE-AAA

Ovens and Furnaces

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Mark Tompkins	M 12/02/2020	Heath Dehn	6/20/2018
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Principal: Andrew Stoeckle			



NATIONAL FIRE PROTECTION ASSOCIATION

The leading information and knowledge resource on fire, electrical and related hazards

MEETING MINUTES

NFPA Technical Committee on Ovens and Furnaces (OVE-AAA) NFPA 86 First Draft Meeting (A2026)

October 1-3, 2024
8:00am – 5:00pm (ET)

Holiday Inn Orlando – Disney Springs Area
1805 Hotel Plaza Blvd
Lake Buena Vista, FL 32830

1. **Call to order.** Franklin Switzer, chair, called the meeting to order at 8:00am on October 1st.
2. **Introductions.** Attendees introduced themselves and identified their affiliation and staff took attendance.
3. **Chair report.** Franklin Switzer welcomed attendees and provided an overview of the meeting.
4. **Staff liaison report.** Heath Dehn provided an overview of the standards development process and the revision cycle schedule.
 - a. No members declared that they had been retained to represent the interest of an entity that would be classified in an interest category different from their own with respect to a specific issue or issues that were addressed by the committee.
5. **Previous meeting minutes.** The minutes from May 2024 web/teleconference were approved without revision.
6. **NFPA 86 First Draft.**
 - a. **Review of Public Inputs.** The Technical Committee reviewed the Public Inputs and developed Committee Inputs and First Revisions as necessary. These will be available in the First Draft Report at www.nfpa.org/86.
 - b. **Reconstituted Task Group(s).** The following task groups provided their reports and recommendations and have been reconstituted to continue their work:
 - i. **Class A Oven.**
 1. **Scope.** Review all NFPA 86 requirements for Class A ovens and provide a report of recommended updates to the technical committee at the Second Draft meeting.
 2. **Members.** Saoirse George, Charles G. Keith, William “Bill” Norge, Geoffrey A. Raifsnider, Richard J. Martin, Steven Onsager,

These minutes are considered preliminary until approved at the next committee meeting.

William Murray*, Jeremy R. Conjura, Steven M. Kormann,
Kenneth Graf*, Joseph D. DiGiacomo, and William “Bill” Norge
*Non-Committee Member

ii. Fundamentals and Class B Ovens.

1. Scope. Review Chapters 1 through 8 and Chapter 12 (Class B ovens) and provide a report of recommended updates to the technical committee at the Second Draft meeting.
2. Members. Ted Jablkowski, David M.J. Lauterbach, Saoirse George, Scott Johnston, Richard J. Martin, Geoffrey A. Raifsnider, Frank J. Kaczmarczyk, Mark A. Altoonian, Philip J. Saucier, Kevin J. Carlisle, Donald Zissa, Mark V. Urda, Steven Onsager, Bryan R. Baesel, James E. Franks, William Murray*, Jeremy R. Conjura, Zach Brooks, Eric Pedaci, Bill Rucki*, Benjamin A. Gatto, William “Bill” Norge, Joseph D. DiGiacomo, Jason McHood, and Jeffrey T. Rafter
*Non-Committee Member

iii. Class C Ovens.

1. Scope. Review all NFPA 86 requirements for Class C ovens and provide a report of recommended updates to the technical committee at the First Draft meeting.
2. Members. Andrew Stoeckle, Jason McHood, Bryan R. Baesel, Scott Johnston, Laura Liu, and Jim Duncan

iv. Class D Ovens.

1. Scope. Review all NFPA 86 requirements for Class D ovens and provide a report of recommended updates to the technical committee at the First Draft meeting.
2. Members. Scott Johnston, Andrew Stoeckle, Craig O. Miller, Bob Wilson*, Bryan Stern*, and George Address*
*Non-Committee Member

v. Explosion Relief.

1. Scope. Identify and propose methodologies and justifications needed to permit oven enclosures without explosion relief. This task group is also responsible in reviewing submitted Public Comments related to explosion relief, and providing motions to the committee.
2. Members. Scott Johnston, William “Bill” Norge, Steven Onsager, Geoffrey A. Raifsnider, Jeremy R. Conjura, Richard A. Gallagher, Delmar R. “Trey” Morrison III, Philip J. Saucier, Joseph D. DiGiacomo, Andrew Ryerson, John Olson*, Peter Komrowski, Albert J. Gonzales, Michael Grande*, Anders Nelson*, Scott

Johnston, and Robert J. Sanderson
*Non-Committee Member

vi. Flame Propagation.

1. Scope. Investigate flame propagation on manifolded/non-continuous nozzles. Submit Public Inputs prior to the First Draft meeting.
2. Members. Daniel Ertl, Joseph D. DiGiacomo, Benjamin A. Gatto, David M.J. Lauterbach, Philip J. Saucier, Jeffrey T. Rafter, Jim Duncan

c. **New Task groups.** The following task groups were appointed to work subsequent to the meeting:

i. Sediment Trap.

1. Scope. A sediment trap in a horizontal pipe run does not have the same effect on foreign material in the gas vapor and requirements need to be clarified that sediment traps and filters should only be on a vertical pipe run. This task group is to provide revisions to the committee, for review at the Second Draft meeting, to better communicate the proper location to install a sediment trap.
2. Members. Robert J. Sanderson, Edward Baldwin, D. Jason Darrell, Joseph D. DiGiacomo, Daniel Ertl, Richard J. Martin, Jason McHood, Jeffrey T. Rafter, Robert J. Sanderson, and Kenneth Graf*
*Non-Committee Member

ii. Overpressure Protection Device.

1. Scope. Define how to determine the proper setting of the OPD and what devices or functions need to be protected. The task group will develop PC for review at the Second Draft meeting. See CI-42, FR-10, and CI-9.
2. Members. Kevin J. Carlisle, Scott M. Fogle, David M.J. Lauterbach, Jason McHood, Steven Onsager, Mark A. Altoonian, and Peter Komrowski

iii. Oven Cleaning.

1. Scope. Review the standard and provide proposed revisions which address the cleaning of ovens.
2. Members. Geoffrey A. Raifsnider, Edward Baldwin, Joseph D. DiGiacomo, Richard A. Gallagher, Richard J. Martin, William “Bill” Norge, Steven Onsager, and Jeffrey T. Rafter

iv. Positive Interlock Testing Method.

1. Scope. Review the requirements of 8.2.7.1 to identify a manual test method that is equivalent to 8.2.7.1, to ensure the system is out of operation during testing, to ensure safety devices are returned to their normal operating state when testing is complete, and to ensure that the system is returned to operation with all of its safety devices operational.
2. Members. Jeremy R. Conjura, Edward Baldwin, Joseph D. DiGiacomo, Steven M. Kormann, David M.J. Lauterbach, Robert J. Sanderson, and Kenneth Graf*
*Non-Committee Member

v. Oxidizer Commissioning Operations.

1. Scope. Review new material in 10.4 (see FR-40) for current industry needs to include other oxidizer apps where the LFL of the effluent may be outside the range of the 10.4 revisions.
2. Members. Richard J. Martin, Jeremy R. Conjura, Joseph D. DiGiacomo, Jim Duncan, Jeffrey T. Rafter, and Geoffrey A. Raifsnider

7. Other Business.

- a. Members of the Fundamentals and Class B Ovens Task Group are planning to attend the NFPA 2, *Hydrogen Technologies Code*, pre-Second draft meeting on December 11th. Information on this meeting is available at nfpa.org/2next.

8. **Future meetings.** The next committee meeting is expected to be in July 2025. A meeting notification will be posted at www.nfpa.org/86next when the meeting is scheduled.

9. **Adjournment.** The meeting was adjourned at 12:30pm on October 3rd.

Attendees

Committee Members:

✓	Franklin Switzer	Chair	S-afe, Inc.
✓	Heath Dehn	Staff Liaison	National Fire Protection Association
	Bryan R. Baesel	Principal	Honeywell/Eclipse/CEC Combustion Safety, Inc.
✓	Edward Baldwin	Principal	BABBCO Tunnel Ovens
✓	Kevin J. Carlisle	Principal	Karl Dungs, Inc.
✓	Jeremy R. Conjura	Principal	Corning Incorporated
✓	D. Jason Darrell	Principal	Boiler Specialists Inc.
	Robert Jackson Davis	Principal	Arconic
✓	Joseph D. DiGiacomo	Principal	Retired
✓	Jim Duncan	Principal	Surface Combustion, Inc.
✓	Daniel Ertl	Principal	ERTL Enterprises

Attendees**Committee Members:**

✓	Scott M. Fogle	Principal	SCC, Inc.
✓	Richard A. Gallagher*	Principal	Zurich Services Corporation
	Ben Gasbarre	Principal	Gasbarre Thermal Processing Systems
✓	Benjamin A. Gatto	Principal	Hydro Aluminum Extrusions North America
	Saoirse George	Principal	Tokio Marine America, Inc.
	Albert J. Gonzales	Principal	Furnace Control LLC
✓	Ted Jablkowski	Principal	Fives North American Combustion, Inc.
	Kai-Eric Jensen	Principal	Jensen Industries, Inc.
	Bill Johns, P.E.	Principal	Los Angeles City Fire Department
✓	Scott Johnston	Principal	Caterpillar Incorporated
✓	Frank J. Kaczmarczyk*	Principal	Cambridge-Lee Industries LLC
	Charles G. Keith	Principal	Keith-Pfaendtner Engineering LLC
✓	Steven M. Kormann	Principal	Emerson Automation Solutions
✓	David M.J. Lauterbach*	Principal	The DuPont Company, Inc.
✓	Richard J. Martin	Principal	Martin Thermal Engineering, Inc.
✓	Jason McHood	Principal	Airgas
	Daniel E. Michael	Principal	Pyroair International
✓	Craig O. Miller	Principal	Consarc Corporation
	Delmar R. “Trey” Morrison III	Principal	Exponent, Inc.
	Robert J. Muren	Principal	Liberty Mutual Insurance Company
✓	William “Bill” Norge*	Principal	3M
✓	Steven Onsager	Principal	Horizon Performance Technologies LLC
	William Overton	Principal	Consolidated Nuclear Security, LLC, Y-12
✓	Jeffrey T. Rafter	Principal	Selas Heat Technology Company, LLC
✓	Geoffrey A. Raifsnider	Principal	Global Finishing Solutions
✓	Andrew Ryerson	Principal	FM
✓	Robert J. Sanderson	Principal	Rockford Systems
✓	Philip J. Saucier	Principal	Ramboll Company/O'Brien & Gere
✓	Raymond E. Serafini, Jr.*	Principal	Messer North America Inc./Linde, LLC
✓	Andrew Stoeckle	Principal	AFC Holcroft LLC
✓	Mark V. Urda*	Principal	Synergy Systems Inc.
	Donald Zissa	Principal	SIS-TECH
	James E. Franks	Voting Alternate	AXA XL/Global Asset Protection Services, LLC
✓	Laura Liu	Voting Alternate	Technical Standards & Safety Authority (TSSA)
	Joseph T. Nelson	Voting Alternate	CoorsTek

Attendees**Committee Members:**

✓	Mark A. Altoonian	Alternate	Y-12 Security Complex
	Joshua P. Askey	Alternate	Corning CET
	Denise Beach	Alternate	FM
	Zach Brooks	Alternate	Emerson Automation Solutions
	John Dauer	Alternate	SCC, Inc.
✓	Travis M. Eddy	Alternate	Flynn Burner Corporation
	Stephen Garner	Alternate	Exponent, Inc.
	Brian Kelly	Alternate	Honeywell Thermal Solutions
	Ben Kinzel	Alternate	Global Finishing Solutions
✓	Peter Komrowski	Alternate	Ramboll Company/O'Brien & Gere
✓	Eric Pedaci*	Alternate	Fives North American Combustion Inc.
✓	Gavin Lee St. John*	Alternate	Surface Combustion, Inc.
	Mark Tompkins	Alternate	AFC-Holcroft, LLC
	Mark Tuleta	Alternate	Zurich Services Corporation

Guests:

Kenneth Graf
Roman Kraynyk
Robert Lane
Simon Walker

IBSC Service Consulting
Tokyo Marine America
Nucore Steel Texas
[Organization]

*Participated by teleconference

Total number in attendance: 40



Public Comment No. 4-NFPA 86-2025 [New Section after 5.2.6.2]

5.2.6.3 Means shall be provided to allow for the cleaning of oven and the removal of accumulated combustible debris or residues.

A.5.2.6.3 Examples of combustible debris or residues that can accumulate in ovens may include, but not limited to, drippings from painted metal parts, lint or oily residues from processed cloth, or organic material from food processing. Accumulations can be found in any section of an oven, including the heating chamber or ductwork. Workers need access to oven components so they can be cleaned to reduce the hazard. This should include all areas where combustible materials may accumulate.

Statement of Problem and Substantiation for Public Comment

This change specifically addresses the design of the furnace with regards to ability to clean surfaces and to remove accumulations. This is intended to convey that maintenance activities include cleaning.

Related Item

- CI-19

Submitter Information Verification

Submitter Full Name: Geoffrey Raifsnider

Organization: Global Finishing Solutions

Street Address:

City:

State:

Zip:

Submittal Date: Wed May 21 11:51:14 EDT 2025

Committee: OVE-AAA



Public Comment No. 8-NFPA 86-2025 [Section No. 6.2.4.2]

6.2.4.2* Piping and Fittings.

6.2.4.2.1*

Piping materials shall be compatible with the fluid and service conditions.

6.2.4.2.1.1

Natural gas, manufactured gas, or liquefied petroleum gas (LP-Gas in vapor phase) piping shall comply with NFPA 54 or ASME B31.3, *Process Piping*.

6.2.4.2.1.2

Hydrogen gas or hydrogen gas mixture piping shall comply with NFPA 2 or ASME B31.12, *Hydrogen Piping and Pipelines*.

6.2.4.2.1.3

Gas piping not addressed in 6.2.4.2.1.1 and 6.2.4.2.1.2 shall comply with the applicable requirements of ASME B31.3, *Process Piping*.

6.2.4.2.1.4

Where threaded fuel gas piping is used it shall be a minimum schedule 40.

6.2.4.2.2

Fuel gas piping shall be sized to provide flow rates and pressure to maintain a stable flame over the burner operating range.

6.2.4.2.3*

The interior of gas pipe, tubing, and fittings shall be free of debris before putting into service.

Flanged Connections

A welded flange connection, where used, shall have the same dimensional specification of the mating flange.

add Annex

Examples of dimensional specifications for welded connections are

- (1) For Grey cast iron and white cast iron flange connections ,
 - (2) Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250. . ASME B16.1
 - (3) Metallic flanges — Part 2: Cast iron flanges, ISO 7005-2.
- (4) Copper flange.
 - (5) ANSI/ASME B16.24, Cast Copper Alloy Pipe Flanges and Flanged Fittings: Classes 150, 300, 600, 900, 1500, and 2500 . .
 - (6) ISO 7005-3 Metallic flanges - Part 3: Copper Alloy and Composite flanges.
- (7) For other flanged connections
 - (8) Standard for Pipe Flanges and Flanged Fittings: NPS ½ through NPS 24, Metric/Inch Standard, ASME B16.5.
 - (9) Metallic flanges — Part 1: Steel flanges for industrial and general service piping systems. ISO 7005-1

Flange specifications other than these listed below exist. These are simply more common.

Statement of Problem and Substantiation for Public Comment

The proposed revision clarifies the flange specifications and allows for other specifications other than ASME B31 series.

Related Item

- FR 35

Submitter Information Verification

Submitter Full Name: Kevin Carlisle

Organization: Karl Dungs, Inc.

Street Address:

City:

State:

Zip:

Submittal Date: Fri May 23 10:30:54 EDT 2025

Committee: OVE-AAA



Public Comment No. 2-NFPA 86-2025 [Section No. 6.2.8]

6.2.8 Overpressure Protection.

6.2.8.1

Overpressure protection shall be provided in either of the following cases:

- (1) Where the supply pressure exceeds the maximum operating pressure limitation of any downstream component
- (2) Where the failure of a single upstream line regulator or service pressure regulator results in a supply pressure exceeding the maximum operating pressure of any downstream component

6.2.8.2

Overpressure protection shall be provided by any one of the following:

- (1) A series regulator in combination with a line regulator or service pressure regulator
- (2) A monitoring regulator installed in combination with a line regulator or service pressure regulator
- (3) * A full-capacity pressure relief valve
- (4) * An overpressure cutoff device
- (5) A high-pressure switch in combination with a rated shutoff valve

6.2.8.3*

The overpressure protection device shall be set no higher than the maximum operating pressure of the downstream component having the lowest rated pressure.

Add annex

A.6.2.8.3* : Overpressure protection devices should be set to prevent a pressure that causes, leakage to atmosphere, leakage to the burner, or unsafe operation of the burner. This setting shall consider the operating pressure limitation or rating for safety shutoff valves, gas pressure switches / sensing devices, gas pressure regulators, and manual shutoff valves, and the setting of the OPD should additionally consider the burst pressure (pressure the causes loss of gas containment) for gages, fitting, test valves, flow control valves, and other components installed that don't provide proper operation of the burner, or devices, if they fail, don't cause an increase in hazardous conditions.

Sometimes the actual pressure downstream of an overpressure protection device can exceed its setting. This is due to the response time of the overpressure protection device and the failure mode of the upstream system. However, the system should be designed to minimize this delay in response time.

Statement of Problem and Substantiation for Public Comment

This is the work from the NFPA 86 Task Group on Overpressure Protection Device

Related Item

- See CI-42, FR-10, and CI-9.

Submitter Information Verification

Submitter Full Name: Kevin Carlisle

Organization: Karl Dungs, Inc.

Street Address:

City:

State:

Zip:

Submittal Date: Fri May 16 09:37:35 EDT 2025

Committee: OVE-AAA



Public Comment No. 5-NFPA 86-2025 [New Section after 7.4.3]

7.4.3.1 * User shall establish a cleaning/housekeeping schedule that mitigates combustible material accumulation in quantities sufficient to be ignited.

A.7.4.3.1 A PHA or material testing may be needed to determine cleaning frequency. See Annex N. Additional information to assist in determining the cleaning frequency can be found in FM Property Loss Prevention Data Sheet 6-9, "Industrial Ovens and Dryers".

Statement of Problem and Substantiation for Public Comment

This change specifically addresses the cleaning frequency to be established by the user based upon ignitable concentrations. This is intended to convey that maintenance activities include cleaning. Annex material provides guidance on how to establish the frequency and extent of cleaning. Includes pointers to Annex N and FM Data Sheet 6-9.

Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
Public Comment No. 6-NFPA 86-2025 [Section No. O.1.2.10]	
<u>Related Item</u>	
• CI-19	

Submitter Information Verification

Submitter Full Name: Geoffrey Raifsnider
Organization: Global Finishing Solutions
Street Address:
City:
State:
Zip:
Submittal Date: Wed May 21 12:14:12 EDT 2025
Committee: OVE-AAA



Public Comment No. 3-NFPA 86-2025 [Section No. 8.2.7]

8.2.7

Safety devices shall not be bypassed electrically or mechanically.

8.2.7.1

The requirement in 8.2.7 shall not prohibit safety device testing and maintenance

a time delay when used in accordance with all requirements in 8.2.

~~5. Where a system includes a "built-in" test mechanism that bypasses any safety device, it shall be interlocked to prevent operation of the system while the device is in the test mode, unless listed for that purpose:~~

~~7.1.1 through 8.2.7.~~

~~2 The requirement in~~

~~1.6.~~

8.2.7

~~shall not prohibit a time delay~~

.1.1*

Time delays shall only be applied to the action of pressure-proving, flow-proving, or proof-of-closure safety switch as used in accordance with 8.7.1.12.3(3)

~~, where the following conditions exist: There is an~~

A.8.2.7.1.1

No delay timers should be installed on devices that directly measure the flammability risk, such as continuous vapor concentration controllers or oxygen measurement systems on LOC equipment.

8.2.7.1.2

There shall be a documented operational need demonstrated for the time delay.

~~• The use of a time delay is approved.
The time delay feature is not~~

8.2.7.1.3

The time delay shall be approved.

8.2.7.1.4

The time delay shall not be adjustable beyond 5 seconds.

8.2.7.1.5

A single time delay

~~does~~

shall not serve more than one pressure-proving or flow-proving safety device.

8.2.7.1.6

The time from an abnormal pressure or flow condition until the holding medium

~~is~~

shall be removed from the safety shutoff valves does not exceed 5 seconds.

8.2.7.2 *

The requirement in 8.2.7 shall not prohibit the installation of “built-in” test mechanisms that bypasses any safety device when used in accordance with all the requirements in 8.2.7.2.1 and 8.2.7.2.2.

A.8.2.7.2

A “built-in” test mechanisms may include electrical devices, logical programming, isolation valves, or test ports that may render a safety device ineffective if not returned to normal operation. The test mechanism could be integral to the safety device or a separate device as part of an assembly.

8.2.7.2.1

The test mechanism(s) shall be necessary to conduct documented safety device testing and documented maintenance in accordance with 8.2.5.

8.2.7.2.2

The test mechanism(s) shall be either interlocked in accordance with 8.2 to prevent operation of the system while the device is in the test mode or alternative protective measures implemented in accordance with 8.2.7.2.2.1 through 8.2.7.2.2.3

8.2.7.2.2.1*

Alternative protective measures shall be defined within a documented PHA.

A8.2.7.2.2.1*

Alternative protective measures could include administrative controls.

8.2.7.2.2.2

The defined alternative protective measures shall be implemented.

8.2.7.2.2.3

The documented PHA shall be Approved.

Additional Proposed Changes

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
Draft_Language_8.2.7_-_final.docx		

Statement of Problem and Substantiation for Public Comment

Ovens often contain components or devices to enable testing or maintenance on the system that if left in the incorrect state would render safety system ineffective. The changes to section 8.2.7 adds additional requirements to ensure that systems are returned to normal operation so that the safety system will function when required. The requirements include either interlocking of the test mechanism to prevent system operation or through the implementation of alternative protective measures.

Related Item

- Committee Input No. 23-NFPA 86-2024

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Committee: OVE-AAA

8.2.7

Safety devices shall not be bypassed electrically or mechanically.

8.2.7.1

The requirement in 8.2.7 shall not prohibit a time delay when used in accordance with all requirements in 8.2.7.1.1 through 8.2.7.1.6.

8.2.7.1.1*

Time delays shall only be applied to the action of pressure-proving, flow-proving, or proof-of-closure safety switch as used in accordance with [8.7.1.12.3\(3\)](#)

A8.2.7.1.1

No delay timers should be installed on devices that directly measure the flammability risk, such as continuous vapor concentration controllers or oxygen measurement systems on LOC equipment.

8.2.7.1.2

There shall be a documented operational need demonstrated for the time delay.

8.2.7.1.3

The time delay shall be approved.

8.2.7.1.4

The time delay shall not be adjustable beyond 5 seconds.

8.2.7.1.5

A single time delay shall not serve more than one pressure-proving or flow-proving safety device.

8.2.7.1.6

The time from an abnormal pressure or flow condition until the holding medium shall be removed from the safety shutoff valves does not exceed 5 seconds.

8.2.7.2 *

The requirement in [8.2.7](#) shall not prohibit the installation of "built-in" test mechanisms that bypasses any safety devices when used in accordance with all the requirements in 8.2.7.2.1 and 8.2.7.2.2

A8.2.7.2

A "built-in" test mechanisms may include electrical devices, logical programming, isolation valves, or test ports that may render a safety device ineffective if not returned to normal operation. The test mechanism could be integral to the safety device or a separate device as part of an assembly.

8.2.7.2.1

The test mechanism(s) shall be necessary to conduct documented safety device testing and documented maintenance in accordance with 8.2.5.

8.2.7.2.2

The test mechanism(s) shall be either interlocked in accordance with 8.2 to prevent operation of the system while the device is in the test mode or alternative protective measures implemented in accordance with 8.2.7.2.2.1 through 8.2.7.2.2.3

8.2.7.2.2.1*

Alternative protective measures shall be defined within a documented PHA.

A8.2.7.2.2.1*

Alternative protective measures could include administrative controls.

8.2.7.2.2.2

The defined alternative protective measures shall be implemented.

8.2.7.2.2.3

The documented PHA shall be Approved.

Substantiation:

Ovens often contain components or devices to enable testing or maintenance on the system that if left in the incorrect state would render safety system ineffective. The changes to section 8.2.7 adds additional requirements to ensure that systems are returned to normal operation so that the safety system will function when required. The requirements include either interlocking of the test mechanism to prevent system operation or through the implementation of alternative protective measures.



Public Comment No. 13-NFPA 86-2025 [Section No. 8.3.2]

8.3.2*

Where PLCs are not listed for combustion safety service or as combustion safeguard and where used for combustion safety service, the safety PLCs and its associated input and output (I/O) shall be as follows:

- (1) PLCs and I/O shall be third-party certified to IEC 61508, *Functional Safety of Electrical/Electronic/Programmable Electronic Safety-Related Systems*, safety integrity level (SIL) 2 or greater
- (2) The processor and the I/O shall be listed for control reliable service and applied to achieve at least an SIL 2 capability per the manufacturer's safety manual
- (3) Implemented such that access to safety functions shall be separate from access to nonsafety functions.
- (4) Implemented such that access to PLC logic dedicated to safety functions shall be restricted to prevent unauthorized changes.
- (5) Safety PLCs shall not replace the following devices:
 - (6)* Manual emergency switches
 - (7) ~~Continuous vapor concentration high-limit controllers~~

8.3.2.1 Software.

8.3.2.1.1

Access to the PLC and its logic shall be restricted to authorized personnel.

8.3.2.1.2

Software shall be documented as follows:

- (1) Labeled to identify elements or a group of elements containing safety software
- (2) Labeled to describe the function of each element containing safety software
- (3) Be sufficient for users to perform periodic functional testing

8.3.2.1.3

A listing of the program with documentation shall be available.

8.3.2.1.4

Software shall be designed per the PLC manufacturer's instruction to achieve SIL 2 or greater capability and shall be validated by another qualified individual.

8.3.2.1.5

A safety requirements specification document, in accordance with ANSI/ISA 61511, *Functional Safety: Safety Instrumented Systems for the Process Industry Sector*, or equivalent, shall be developed and retained for the life of the installation.

8.3.2.1.6

Minimum functional testing requirements shall be consistent with maintaining the reliability in accordance with this chapter and with safety requirements specification documentation.

8.3.2.1.7

When supported by a documented hazard analysis, the functional testing requirements shall be permitted to be reduced for routine inspections and documented in the safety requirements specification document.

8.3.2.2

Class A or Class B circuits as described in *NPFA 72* shall be employed when the following components are connected to the control panel:

- (1) Concentration measurement devices, and other initiating devices
- (2) Concentration controlling valves
- (3) Supervisory devices that monitor critical elements or functions such as low pressure switches, loss of ventilation switches
- (4) Notification appliances
- (5) Signaling line circuits

8.3.2.3

A signaling line circuit used as part of a Safety PLC shall not be shared by other operating systems.

Statement of Problem and Substantiation for Public Comment

The requirements for safety control systems for Ovens and Furnaces should be updated to the modern standard. By following ANSI/ISA 61511, which the document does not call out but implies the usage through 8.3.2.1.4 "Software shall be designed per the PLC manufacturer's instruction to achieve SIL 2 or greater capability and shall be validated by another qualified individual." we can provide a framework for manufacturers and employers to meet required safety functionality through robust risk analyses.

This change brings NFPA 86 in line with other standards such as NFPA 69 which also deals with solvent vapor concentration monitoring and does not include any requirements such as a "Continuous Vapor High Limit Controller". As professionals in fire protection systems, we must provide clear, concise, and consistent fire protection requirements when dealing with near identical hazard mitigation. With modern Safety Instrumented Systems, they can provide the same level of protection without the need for purchasing a specialty device. Certified gas monitoring devices, connected to the Safety PLC through the use of Class A or Class B circuits can provide the same level of protection.

Additionally, this change identifies more requirements in terms of inspection and testing in line with the safety requirements document that is generated as part of applying ANSI/ISA 61511. This key functional testing although partially detailed in Chapter 7, can be more fully defined through risk analysis and tailor to the application.

As Battery Cell manufacturing and Chip manufacturing is being installed in the US, ovens are key parts of the manufacturing process. Clarifying and updating specifications can only help foreign and US companies better adhere to fire protection standards, and allow AHJs to better understand and enforce the requirements of this document.

Related Item

- First Draft Report

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Committee: OVE-AAA



Public Comment No. 11-NFPA 86-2025 [Section No. 8.4.1.2.3]

8.4.1.2.3— *

To begin the timed preignition purge interval, all of the following conditions shall be satisfied:

- (1)* The minimum required preignition airflow is proved.
- (2)* At least one safety shutoff valve is proved closed between all pilot burners and the fuel supply for ovens with total pilot capacity over 400,000 Btu/hr.
- (3) At least one safety shutoff valve is proved closed between all main burners and the fuel supply for ovens with total capacity over 400,000 Btu/hr.

Additional Proposed Changes

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
PC_for_CI-26_-_250602.docx		

Statement of Problem and Substantiation for Public Comment

This proposed change utilizes the correct figure fin the Annex for this section. Existing figure was edited and moved to another Annex.

Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
Public Comment No. 12-NFPA 86-2025 [Section No. A.8.7.1.12]	
<u>Related Item</u>	
• CI-26	

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Committee: OVE-AAA

Proposed Change

8.4.1.2.3* To begin the timed preignition purge interval, all of the following conditions shall be satisfied:

(2)* At least one safety shutoff valve is proved closed between all pilot burners and the fuel supply for ovens with total pilot capacity over 400,000 Btu/hr.

(3) At least one safety shutoff valve is proved closed between all main burners and the fuel supply for ovens with total capacity over 400,000 Btu/hr.

A.8.4.1.2.3 See figure A.8.4.1.2.3

A.8.4.1.2.3 Main burner or pilot safety shutoff valve requirements

Key	Safety shutoff valve requirements		
Safety shutoff valve	Under 150,000 Btu/hr (44 kW)	150,000 to 400,000 Btu/hr (44 kW to 117 kW)	Over 400,000 Btu/hr (117 kW)
Safety shutoff valve with visual identification			
Safety shutoff valve with visual identification and proof of closure			

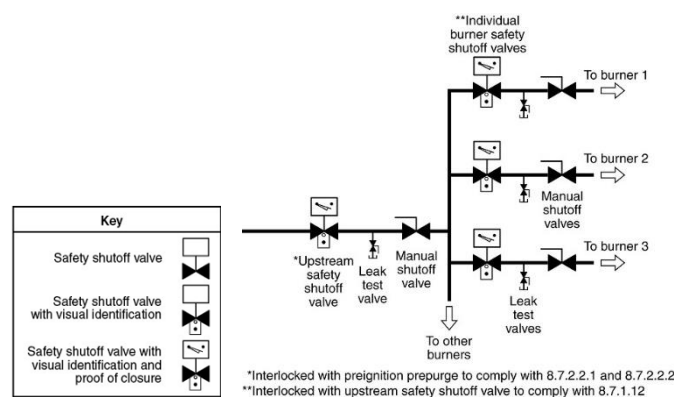
8.7.1.12 * Multiple Burners.

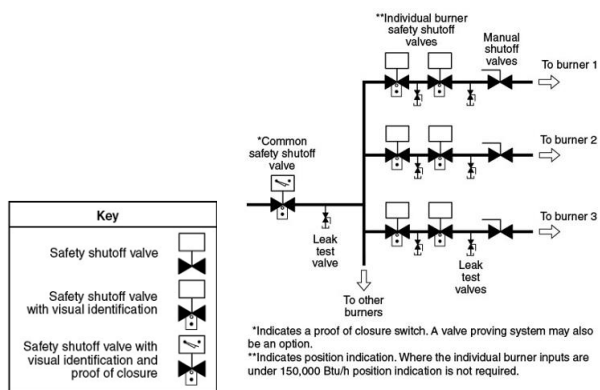
A.8.7.1.12 Paragraph Section 8.7.1.12 addresses conditions under which only one safety shutoff valve is to close to isolate a burner from its fuel gas supply. See 8.4.1.8 and 8.4.1.9 for guidance regarding conditions that are needed to allow that burner to be placed back in service. The requirements of 8.4.1.9 might not allow a burner shut off by closing a single safety shutoff valve to be placed back in service without repeating a preignition purge.

The requirements of 8.7.1.12 do not preclude opening of the safety shutoff valve located upstream of the individual burners using single safety shutoff valves during the trial for ignition for the first burner being lighted.

See [Figure A.8.7.1.12\(A\)](#) and [Figure A.8.7.1.12\(B\)](#).

Figure A.8.7.1.12(A) Multiple Burner System Using Proof-of-Closure Switches.





Public Comment: Revised and moved portions of figure to applicable sections. Kept “key” with each.



Public Comment No. 7-NFPA 86-2025 [Section No. 10.4.2]

10.4.2 Operations.

10.4.2.1

The oxidizer system shall be started and brought to operating temperature prior to introducing fume (dirty gas) flow.

10.4.2.2

The user shall be responsible for ensuring that the exhaust stream of the ~~volatile organic compound (VOC)~~ source flammables is not in the flammable range for the mixture of VOC being destroyed in the oxidizer system.

10.4.2.

3-

Where it cannot be demonstrated that the exhaust stream of the VOC source cannot exceed 25 percent of the lower flammable limit (LFL), the owner or operator of the oxidizer system shall install both of the following:

- (1) ~~At least one continuous vapor concentration high limit interlock in the duct that conveys the VOC and air mixture to the oxidizer system, in accordance with 11.6.9.3.1 -~~
- (2) ~~A 3-way diverter valve that redirects the oven exhaust flow to an exhaust stack that leads directly to atmosphere.~~

40.

4

~~2.4~~

-

The continuous vapor concentration high-limit interlock sensor shall be located as close as possible to the point where the

VOC

flammables conveying duct leaves the source oven.

10.4.2.4.1

Redundant continuous vapor concentration high-limit interlock sensors shall be permitted to be installed downstream of the nearest upstream sensor by a distance greater than two duct diameters.

10.4.2.5

The location of the 3-way diverter valve shall be as close as possible to the tie-point for the downstream oxidizer system.

10.4.2.5.1

The 3-way diverter valve shall be located at least 200 ft (61 m) downstream of the primary continuous vapor concentration high-limit interlock sensor location.

10.4.2.6

All of the following automatic actions shall be taken when any continuous vapor concentration high limit interlock is tripped:

- (1) The source oven's heating system shall be shut off.
- (2) The introduction of new feed material into the source oven shall be halted.
- (3)* The source of

VOC fumes

- (1) flammables shall be diverted to atmosphere until the vapor concentration limit interlock is clear and the fault has been reset by the operator.

10.4.2.7

The continuous vapor concentration controller shall be permitted to be used to initiate an additional dilution process that minimizes solvent reduction concentration before it reaches the high-limit threshold. (See 11.6.10.9.)

10.4.2.8

The operator shall ensure the

VOC

flammables concentration is less than 25 percent of LFL before deactivating the 3-way diverter valve to reintroduce a VOC and air fume stream to an operating thermal oxidizer.

Statement of Problem and Substantiation for Public Comment

Delete 10.4.2.3. Ambiguous language with an annex to guide how this is to be demonstrated.
Requiring the addition of a vapor concentration high limit analyzer when it would already be required on the furnace

if you run over 25% of the LFL. Are we saying that you need two of them now?
Requiring the diverter valve to be 200 feet downstream of the analyzer. This feels somewhat arbitrary. Many afterburners are located right at or very close to the furnace.

Replace VOC with flammables: I'd like to have a discussion if VOC is the correct term. could it not be other gases?

Related Item

- FR-40

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Committee: OVE-AAA



Public Comment No. 17-NFPA 86-2025 [Section No. 11.4.1.1]

11.4.1.1 Solvent Atmosphere Ovens.

The safety design data form or nameplate for solvent atmosphere ovens shall include all of the following design data:

- (1) Solvent used
- (2) Quantity of solvent shall be expressed in gallons (liters) or pounds (kg) per batch or per hour entering the oven per batch or in gallons (liters) or pounds (kg) per hour as applicable for the process batch or continuous
- (3) Required purge time
- (4) Oven operating temperature
- (5) Exhaust blower rating for the quantity of solvent in gallons (liters) or pounds (kg) per batch or in gallons (liters) or pounds (kg) _ per hour at the maximum operating temperature, as applicable for the process batch or continuous

Statement of Problem and Substantiation for Public Comment

Editorial changes to provide greater clarity. Not a technical change.

Related Item

- FR 43 11.4.1.1

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Submittal Date: Tue Jun 03 05:40:53 EDT 2025

Committee: OVE-AAA



Public Comment No. 18-NFPA 86-2025 [Section No. 11.6.1.3]

11.6.1.3

The determination of safety ventilation shall be based on all of the following:

- (1) Volume of products of combustion entering the oven heating chamber
- (2) Weight or volume of flammable or combustible constituents released during the heating process, based on maximum loading
- (3) ~~Solvent~~ When a combination of solvents is used, use either the constituent solvent that requires the greatest amount of ventilation air per gallon (liter) when a combination of solvents is used ventilation rate or a ventilation rate determined by testing of the mixture
- (4) Design of the oven heating and ventilation system with regard to all of the following:
 - (5) Materials to be processed
 - (6) Temperature to which processed materials are raised
 - (7) Method of heating with regard to direct or indirect venting of combustion products versus alternative use of steam or electrical energy
 - (8) General design of the oven with regard to continuous or batch-type operation
 - (9) Type of fuel and chemicals to be used and any by-products generated in the heating chamber

Statement of Problem and Substantiation for Public Comment

The requirement in item (3) identifies the solvent with the greatest amount of ventilation air per gallon (or liters), where multiple solvents are present, to use in the calculation. The change also includes the option to determine by testing.

Related Item

- PI 68 11.6.1.3(3)

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Public Comment No. 9-NFPA 86-2025 [Section No. A.5.3]

A.5.3



Many ovens include an explosion hazard related to the fuels used for heating, flammable vapors released from the work in process, or the use of special atmospheres. To control these hazards, several methods from NFPA 69 can be applied, including the following:

- (1) Avoiding combustion through the control of the following:
 - (2) Combustible concentration [i.e., keeping combustible material below its lower flammable limit (LFL)]
 - (3) Oxidant concentration (i.e., reducing oxygen below the level needed for ignition)
- (4) Limiting damage by confining deflagration pressures.

Table A.5.3 identifies explosion controls in NFPA 86 that apply to different classes of oven.

Table A.5.3 Explosion Controls

Control Method	Oven Class			
	A	B	C	D
Controlling Combustible Concentration				
Safety shutoff valves per Chapter 8	X	X	X	X
Preignition purge per Chapter 8	X	X	X	X
Trials-for-ignition per Chapter 8	X	X	X	X
Flame supervision per Chapter 8	X	X	X	X
Safety ventilation per Chapter 11	X	-	-	-
Controlling Oxidant Concentration				
Low oxygen atmosphere oven per Chapter 11	X	-	-	-
Special atmosphere control per Chapter 13	-			-X
<u>Special atmosphere control per Chapter 14</u>			X	✖
Confining Deflagration Pressure				
Pressure vessel design per Chapter 14	-	-	-	X

Beyond these explosion controls, Section 5.3 provides additional guidance on explosion control options for Class A ovens. Explosion hazards can be mitigated based on oven design considerations (such as the heat source or recirculation of the exhaust air), added controls (such as LFL monitoring), and the use of deflagration venting.

For additional information regarding deflagration venting see NFPA 68.

Statement of Problem and Substantiation for Public Comment

In the 2023 code cycle, the relevant portions of Chapter 13 were merged into Chapter 14 in order to make Chapter 14 independent of Chapter 13. Now all requirements regarding Oxidant Concentration for vacuum furnaces are found in Chapter 14.

Related Item

- PI 64, FR 1

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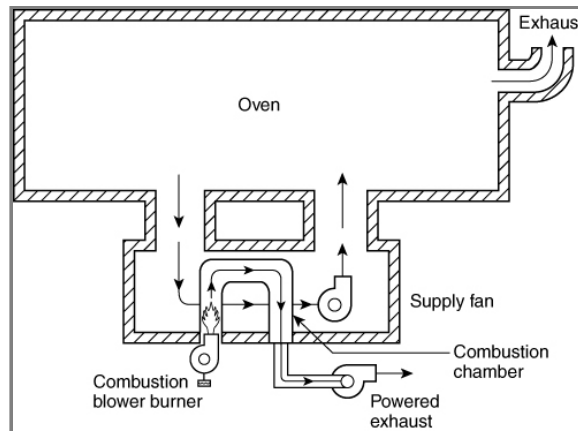
Committee: OVE-AAA



A.5.3.1(5 2) [🔗](#)

Because the combustion air has only one path from the combustion blower through the supervised powered exhaust, there is no buildup of products of combustion in the heat exchanger. The minimum exhaust rate for the heat exchanger should be determined using 11.6.6.1, which requires 183 scfm (5.18 standard m³/min) per 1,000,000 Btu/hr (293.1 kW) burner rating. Refer to Figure A.5.3.1(5 2).

Figure A.5.3.1(5 2) Example of a Non-Recirculating, Indirect-Fired Oven.



Statement of Problem and Substantiation for Public Comment

A review of the current edition determined that the FD revised text in 5.3.1(2) was originally 5.3.1(5), so the annex material numbering and cross reference should be re-established to 5.3.1(2), Task Group recommendation,

Related Item

- 5.3.1(2)

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Committee: OVE-AAA



Public Comment No. 16-NFPA 86-2025 [New Section after A.5.3.3]

A.5.3.3(1)

When reviewing furnace volumes for the intent purpose of considering damage-limiting construction it is important to include all locations and areas where recirculating combustible materials may be found. The volumes used for determining damage-limiting construction often includes the heating chamber, internal and external circulating ductwork, as well as external heaters. Once-through airflow passages that do not recirculate are often excluded from these calculations. Such areas may include fresh air intakes and fresh air supply ductwork as well as dedicated exhaust plenums, ductwork and stacks, here ...

Statement of Problem and Substantiation for Public Comment

Guidance on determining the protected volume when calculating the deflagration vent area is needed. This guidance is based on engineering practices commonly employed in oven design, and requires engineering judgement, subject to acceptance by AHJ. Adding this content as enforceable language is not advised as that could limit appropriate vent area determination.

Related Item

- 5.3.3(1)

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Committee: OVE-AAA



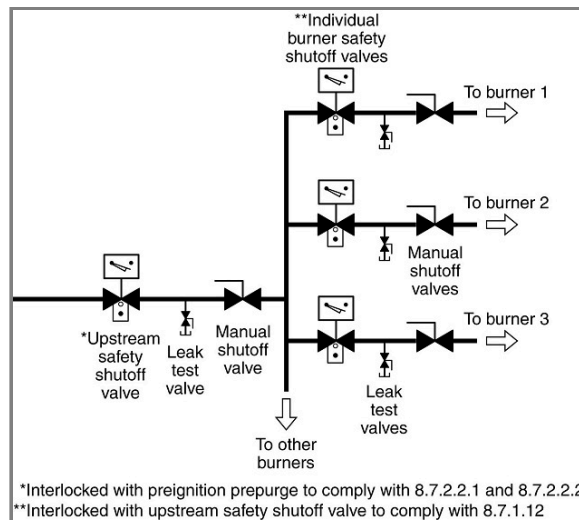
A.8.7.1.12

Paragraph Section 8.7.1.12 addresses conditions under which only one safety shutoff valve is to close to isolate a burner from its fuel gas supply. See 8.4.1.8 and 8.4.1.9 for guidance regarding conditions that are needed to allow that burner to be placed back in service. The requirements of 8.4.1.9 might not allow a burner shut off by closing a single safety shutoff valve to be placed back in service without repeating a preignition purge.

The requirements of 8.7.1.12 do not preclude opening of the safety shutoff valve located upstream of the individual burners using single safety shutoff valves during the trial for ignition for the first burner being lighted.

See Figure A.8.7.1.12(A) and A.8.7.1.12(B).

Figure A.8.7.1.12(A) Multiple Burner System Using Proof-of-Closure Switches.



Additional Proposed Changes

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
PC_for_CI-26_-_250602.docx		

Statement of Problem and Substantiation for Public Comment

Relocated a portion of the figure from A.8.4.1.2.3 to this annex.

Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
Public Comment No. 11-NFPA 86-2025 [Section No. 8.4.1.2.3]	
<u>Related Item</u>	
• CI-26	

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Committee: OVE-AAA

Proposed Change

8.4.1.2.3* To begin the timed preignition purge interval, all of the following conditions shall be satisfied:

(2)* At least one safety shutoff valve is proved closed between all pilot burners and the fuel supply for ovens with total pilot capacity over 400,000 Btu/hr.

(3) At least one safety shutoff valve is proved closed between all main burners and the fuel supply for ovens with total capacity over 400,000 Btu/hr.

A.8.4.1.2.3 See figure A.8.4.1.2.3

A.8.4.1.2.3 Main burner or pilot safety shutoff valve requirements

Key	Safety shutoff valve requirements		
Safety shutoff valve	Under 150,000 Btu/hr (44 kW)	150,000 to 400,000 Btu/hr (44 kW to 117 kW)	Over 400,000 Btu/hr (117 kW)
Safety shutoff valve with visual identification			
Safety shutoff valve with visual identification and proof of closure			

8.7.1.12 * Multiple Burners.

A.8.7.1.12 Paragraph Section 8.7.1.12 addresses conditions under which only one safety shutoff valve is to close to isolate a burner from its fuel gas supply. See 8.4.1.8 and 8.4.1.9 for guidance regarding conditions that are needed to allow that burner to be placed back in service. The requirements of 8.4.1.9 might not allow a burner shut off by closing a single safety shutoff valve to be placed back in service without repeating a preignition purge.

The requirements of 8.7.1.12 do not preclude opening of the safety shutoff valve located upstream of the individual burners using single safety shutoff valves during the trial for ignition for the first burner being lighted.

See [Figure A.8.7.1.12\(A\)](#) and [Figure A.8.7.1.12\(B\)](#).

Figure A.8.7.1.12(A) Multiple Burner System Using Proof-of-Closure Switches.

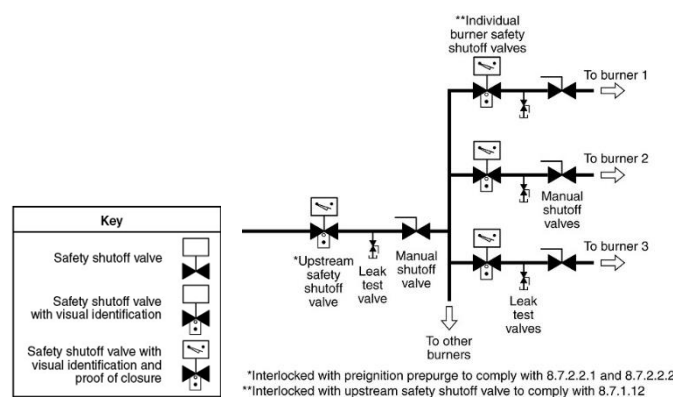
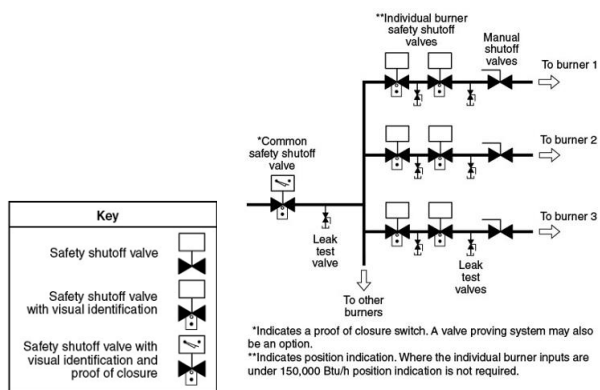


Figure A.8.4.1.2.3(2) A.8.7.1.12 (B) Example for Multiple Burner System with Independently Operated Burners Using a Common SSOV with Single Proved Closed Interlock for Pre-purge.



Public Comment: Revised and moved portions of figure to applicable sections. Kept “key” with each.



Public Comment No. 6-NFPA 86-2025 [Section No. O.1.2.10]

O.1.2.10 FM Publications.

FM, 270 Central Avenue, P.O. Box 7500, Johnston, RI 02919.

FM Approval 7400, *Approval Standard for Liquid and Gas Safety Shutoff Valves*, 2016.

FM Property Loss Prevention Data Sheet 1-44, "Damaged-Limiting Construction," 2023.

FM Property Loss Prevention Data Sheet 6-9, "[Ovens and Dryers](#)", 2021

[FM Property Loss Prevention Data Sheet 6-](#) 11, "Thermal and Regenerative Catalytic Oxidizers," 2018.

FM Property Loss Prevention Data Sheet 6-13, "Waste Fuel Fired Facilities," updated January 2021.

FM Property Loss Prevention Data Sheet 6-17, "Rotary Kilns and Dryers," updated July 2023.

Statement of Problem and Substantiation for Public Comment

Including FM datasheet that was referenced in new annex material

Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
<u>Public Comment No. 5-NFPA 86-2025 [New Section after 7.4.3]</u>	New Informational Reference
<u>Related Item</u>	
• CI-19	

Submitter Information Verification

Submitter Full Name: Geoffrey Raifsnider
Organization: Global Finishing Solutions
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City:
State:
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Submittal Date: Wed May 21 12:19:16 EDT 2025
Committee: OVE-AAA



Committee Input No. 42-NFPA 86-2024 [Global Input]

The term "supply pressure" is not consistently used throughout the document and leads to misinterpretations by users as to what pressures are being referred to within requirements and the annex. The term "gas supply pressure" is also a cause of misinterpretation. At the Second Draft meeting, the committee will address these issues and attempt to clarify how these terms are used and revise them to be consistent throughout the standard. Such sections of concern include, but are not limited to 6.2.6.1, 6.2.8.1, 8.7.1.8, 13.5.6, and 13.5.11.10.3.1.

Submitter Information Verification

Committee: OVE-AAA

Submittal Date: Thu Oct 03 08:38:45 EDT 2024

Committee Statement

Committee Statement: The term "supply pressure" is not consistently used throughout the document and leads to misinterpretations by users as to what pressures are being referenced within requirements and the annex sections. The term "gas supply pressure" is also a cause of misinterpretation. At the Second Draft meeting, the committee will address these issues and attempt to clarify how these terms are used and revise them to be consistent throughout the standard. Such sections of concern include, but are not limited to, 6.2.6.1, 6.2.8.1, 8.7.1.8, 13.5.6, and 13.5.11.10.3.1. Also see committee action taken on Public Input No. 28.

Response Message: CI-42-NFPA 86-2024



Committee Input No. 36-NFPA 86-2024 [Section No. 2.4]

2.4 References for Extracts in Mandatory Sections.

NFPA 54, *National Fuel Gas Code*, 2021 [edition](#).

NFPA 69, *Standard on Explosion Prevention Systems*, 2019 [edition](#).

NFPA 70[®], *National Electrical Code*[®], ~~2023~~ [2026 edition](#).

NFPA 85, *Boiler and Combustion Systems Hazards Code*, 2019 [edition](#).

NFPA 99, *Health Care Facilities Code*, 2021 [edition](#).

NFPA 101[®], *Life Safety Code*[®], 2021 [edition](#).

NFPA 211, *Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances*, 2019 [edition](#).

NFPA 302, *Fire Protection Standard for Pleasure and Commercial Motor Craft*, 2020 [edition](#).

NFPA 820, *Standard for Fire Protection in Wastewater Treatment and Collection Facilities*, 2020 [edition](#).

Submitter Information Verification

Committee: OVE-AAA

Submittal Date: Wed Oct 02 21:53:44 EDT 2024

Committee Statement

Committee Statement: The 2026 edition of the NEC is currently under revision. It is recommended that the applicable extract(s) be updated at the Second Draft meeting.

Response Message: CI-36-NFPA 86-2024



Committee Input No. 21-NFPA 86-2024 [New Section after 3.3.25]

TITLE OF NEW CONTENT

3.3.25.1 Hydrogen Gas

Hydrogen gas having a purity greater than 95% by volume _ or the minimum concentration defined in the most current edition of NFPA 2.

3.3.25.2 Hydrogen Gas Mixtures

Gas mixtures having a concentration greater than 10% hydrogen by volume or the maximum concentration defined in the most current edition of NFPA 2, whichever is greater.

Submitter Information Verification

Committee: OVE-AAA

Submittal Date: Wed Oct 02 13:04:24 EDT 2024

Committee Statement

Committee Statement: The proposed definitions include requirements which does not align with the NFPA Manual of Style. At the Second Draft meeting the committee will reconsider these definitions along with what percent concentration of hydrogen, within a hydrogen gas mixture, will need to apply within NFPA 86. In an effort to harmonize with other NFPA documents, this committee will also consider what actions the technical committees of NFPA 2 and NFPA 54 have taken in regards to hydrogen gas mixture concentrations.

Response Message: CI-21-NFPA 86-2024

[Public Input No. 26-NFPA 86-2024 \[New Section after 3.3.25\]](#)



Committee Input No. 19-NFPA 86-2024 [New Section after 5.2.6.2]

5.6.2.3

Means shall be provided to allow for the cleaning of oven surfaces and the removal of any accumulated combustible debris or residues.

A.5.6.2.3

Examples of combustible debris or residues that can accumulate in ovens include drippings from painted metal parts and lint or oily residues from processed cloth. Accumulations can be found in any section of an oven, including the heating chamber or ductwork. Workers need access to oven surfaces so they can be cleaned back to their original uncontaminated state.

Submitter Information Verification

Committee: OVE-AAA

Submittal Date: Wed Oct 02 11:36:54 EDT 2024

Committee Statement

Committee Statement: The committee will continue to consider requirements for the proper cleaning of ovens.

Response Message: CI-19-NFPA 86-2024

[Public Input No. 40-NFPA 86-2024 \[New Section after 7.4.2\]](#)

[Public Input No. 39-NFPA 86-2024 \[New Section after 7.4.3\]](#)



Committee Input No. 6-NFPA 86-2024 [Section No. 6.2.5.2]

6.2.5.2

Sediment traps shall

have

be in a vertical

leg with a

pipe run with the supply gas flowing down, that uses a tee fitting to direct the gas flow horizontally to the equipment inlet while continuing vertically for the sediment trap.

6.2.5.2.1

Sediment traps shall be located between the equipment isolation valve and the gas filter or strainer.

6.2.5.2.2

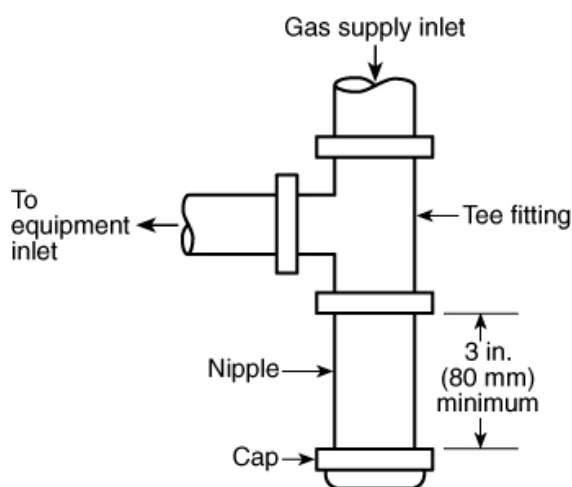
Sediment traps shall have a minimum length of three pipe diameters [minimum of 3 in. (80 mm)] of the same size as the supply pipe as shown in Figure 6.2.5.2 .2.

Figure-6

Figure 6 .2.5.

2-Method

2.2 Method of Installing a Tee Fitting Sediment Trap. [54:Fig. 9.6.8]



Submitter Information Verification

Committee: OVE-AAA

Submittal Date: Tue Oct 01 13:45:37 EDT 2024

Committee Statement

Committee Statement: A sediment trap in a horizontal pipe run does not have the same effect on foreign material in the gas vapor and requirements need to be clarified that sediment traps and filters should only be on a vertical pipe run. At the Second Draft meeting the committee will review revising this section to better communicate the proper location to install a sediment trap.

Response Message: CI-6-NFPA 86-2024

[Public Input No. 15-NFPA 86-2023 \[Section No. 6.2.5.2\]](#)



Committee Input No. 9-NFPA 86-2024 [Section No. 6.2.8.3]

6.2.8.3*

The overpressure protection device shall be set no higher than the maximum ~~operating~~ pressure rating of the downstream component having the lowest rated pressure.

6.2.8.3.1

The lowest rated pressure shall be determined by the lowest value of all of the following:

(1) The maximum operating pressure differential rating of the safety shutoff valve, slam-shut valve, or a vent valve

(2) The maximum rated inlet pressure of a pressure sensing device, pressure regulator, or relief valve

(3) The maximum design pressure of a device or component not identified in 6.2.8.3.1(1) and 6.2.8.3.1(2).

Possible Alternative Language:

6.2.8.3*

Overpressure protection devices shall be set to protect downstream safety components from damage or any device from failure.

A.6.2.8.3

Damage may include pressures that cause internal damage that impair the device from performing its intended function. Failure may be due to pressures exceeding the maximum rated pressure of a device.

A.6.2.8.3

Sometimes the actual pressure downstream of an overpressure protection device can exceed its setting. This is due to the response time of the overpressure protection device and the failure mode of the upstream system.

Submitter Information Verification

Committee: OVE-AAA

Submittal Date: Tue Oct 01 16:04:00 EDT 2024

Committee Statement

Committee Statement: The committee is considering revision to the overpressure protection device pressure sensing requirements.

Response Message: CI-9-NFPA 86-2024

Public Input No. 30-NFPA 86-2024 [Section No. 6.2.8]



Committee Input No. 23-NFPA 86-2024 [Section No. 8.2.7.1]

8.2.7.1

The requirement in 8.2.7 shall not prohibit safety device testing and maintenance in accordance with 8.2.5.

8.2.7.1.1

Where a system includes a “built-in” test mechanism that bypasses any safety device, it shall be interlocked to prevent operation of the system while the device is in the test mode, unless listed for that purpose.

8.2.7.1.2

Where non-interlocked manually operated valves are used to bypass safety devices, they shall be positionally tagged and locked in the non-test position when testing is not being performed.

8.2.7.1.3

Access to keys used to lock the non-interlocked manual operating valves in 8.2.7.1.2 shall be restricted to prevent unauthorized use.

Submitter Information Verification

Committee: OVE-AAA

Submittal Date: Wed Oct 02 14:10:13 EDT 2024

Committee Statement

Committee Statement: The committee will continue to review the requirements of this section to identify a manual test method that is equivalent to 8.2.7.1, to ensure the system is out of operation during testing, to ensure safety devices are returned to their normal operating state when testing is complete, and to ensure that the system is returned to operation with all of its safety devices operational.

Response Message: CI-23-NFPA 86-2024

Public Input No. 43-NFPA 86-2024 [Section No. 8.2.7.1]



Committee Input No. 26-NFPA 86-2024 [Section No. 8.4.1.2.3]

8.4.1.2.3

To begin the timed preignition purge interval, all of the following conditions shall be satisfied:

- (1)* The minimum required preignition airflow is proved.

A.8.4.1.2.3(1)

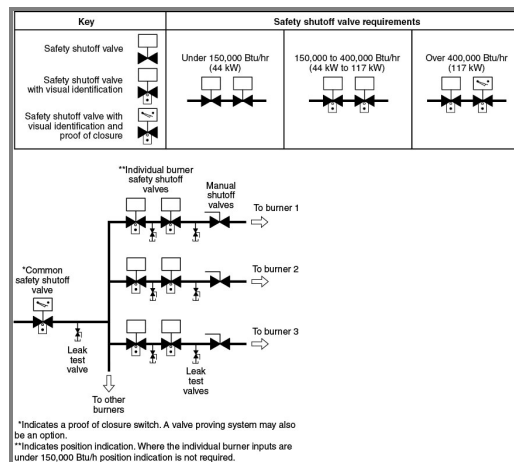
Equipment such as thermal oxidizers commonly process sources of contaminated air. Contaminated air is an indeterminate purge medium. Design of the preignition airflow interlocks should incorporate a means to prove a source of fresh air and also prove the isolation of contaminated air sources during preignition purge. In complex systems involving multiple sources where it is not always possible to shut down all indeterminate sources, providing a fresh air source and positive isolation from all contaminated sources is necessary to ensure proper preignition purging.

- (2)* At least one safety shutoff valve is proved closed between all pilot burners and the fuel supply for ovens with total pilot capacity over 400,000 Btu/hr.

A.8.4.1.2.3(2)

See Figure A.8.4.1.2.3(2).

Figure A.8.4.1.2.3(2) Example for Multiple Burner System with Independently Operated Burners Using a Common SSOV with Single Proved Closed Interlock for Pre-purge.



- (3) At least one safety shutoff valve is proved closed between all main burners and the fuel supply for ovens with total capacity over 400,000 Btu/hr.

Submitter Information Verification

Committee: OVE-AAA

Submittal Date: Wed Oct 02 16:09:01 EDT 2024

Committee Statement

Committee Statement: The committee is evaluating Figure A.8.4.1.2.3(2) to determine if the figure as whole or portions of the figure should be move to another section of the document, such as A.8.7.2.3.

Response Message: CI-26-NFPA 86-2024

Public Input No. 21-NFPA 86-2024 [Section No. A.8.4.1.2.3(2)]



Committee Input No. 29-NFPA 86-2024 [Section No. 8.9.6]

8.9.6*

A line burner, pipe burner, or radiant burner with a heated length in excess of 3 ft (0.9 m) shall have at least one flame detector installed to sense main burner flame at the end of the assembly farthest from the source of ignition, except where permitted by 8.9.6.1.1.

8.9.6.1

A line burner, pipe burner, or radiant burner with a pilot shall have one flame detector installed to sense pilot burner flame at the source of ignition.

8.9.6.1.1

The installation of a flame detector shall not be required where each pilot and main burner flame is equipped with flame supervision in one of the following ways:

- (1) Main and interrupted pilot flames supervised with a single flame sensor
- (2) Self-piloted burner supervised with a single flame sensor

8.9.6.2

A line burner, pipe burner, radiant burner, or burner arrangement with multiple burner components considered to be a single burner shall be equipped and installed with flame propagation devices for reliable flame-propagation characteristics from one burner component to the other.

8.9.6.2.1

The flame propagation device(s) shall be proven and interlocked into the burner management system.

Submitter Information Verification

Committee: OVE-AAA

Submittal Date: Wed Oct 02 17:47:19 EDT 2024

Committee Statement

Committee Statement: There are installations that exist where ribbon burners have been replaced by pipe burners and the users are relying on cross-propagation of ignition from one burner to another. NFPA 86 needs to more clearly define what is acceptable in terms of cross-ignition. In other instances two or more burners have intersecting flame paths and users are employing one as the ignition source to ignite others. Clarity on what is acceptable is needed, and will be reviewed by the committee at the Second Draft meeting.

Response Message: CI-29-NFPA 86-2024