AP1031:
CO/CO_2 SAFETY FOR THE NEW 2021 NBIC STANDARDS

Requirements for equipment rooms with fuel fired boilers or fuel fired pressure vessels

NBIC Standards

The National Board Inspection Code (NBIC) provides standards for the installation, inspection, and repair and/or alteration of boilers, pressure vessels, and pressure relief devices. The NBIC is a best practice standard, and although it is not a law that has been drafted and promulgated by OSHA, it has been adopted or incorporated by reference in many USA and Canadian jurisdictions.

The 2021 NBIC Draft Edition has been accepted by the NBIC Committee. There have been additions to the 2019 edition including updates to the carbon dioxide gas detection system requirements for Liquid Carbon Dioxide storage vessels.

Gas Detector Requirements - 2019 Edition

The 2019 NBIC edition which became mandatory on January 1, 2020, included requirements for the installation of carbon monoxide detectors for rooms containing fuel fired boilers and pressure vessels. And now there are a number of critical changes in the 2021 edition of NBIC that are relavent to gas detection requirements.

The 2019 edition of NBIC from the Tennessee adopted codes, from part 1.6.9 states, "The owner or user shall install a carbon monoxide (CO) detectror/alarm in equipment rooms where fuel fired boilers and/or fuel fired pressure vessels are located in accordance with the authority having Jurisdiction." Because Tennessee does not allow grandfathering, this requirement applies to both new and already installed units no matter how long they have been in place. This is a state requirement so if the boiler room is not equipped with a carbon monoxide detector/alarm it is a code violation. An outstanding code violation will prevent the state from issuing a certificate of operation until the code violation is cleared.

NBIC Part 1 S3.4 states, "GAS DETECTION SYSTEMS Rooms or areas where carbon dioxide storage vessel(s) are located indoors or in enclosed or below grade outdoor locations shall be provided with a gas detection and alarm system for general area monitoring that is capable of detecting and notifying building occupants of a carbon dioxide (CO_2) gas release.

Alarms will be designed to activate a low level pre-alarm at 1.5% concentration of CO_2 and a full high alarm at 3% concentration of CO_2.

These systems are not designed for employee personal exposure monitoring. Gas detection systems shall be installed and tested in accordance with manufactures installation instructions and the following requirements;

a) Activation of the gas detection system shall activate an audible alarm within the room or area in which the carbon dioxide storage vessel is located.

b) Audible alarms shall also be placed at the entrance(s) to the room or area where the carbon dioxide storage vessel and/ or fill box is located to notify anyone who might try to enter the area of a potential problem."

Note: Portions of this article are based on the National Board Inspection Code, distributed by The National Board of Boiler and Pressure Vessel Inspectors.

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GfG solutions for boiler and vessel equipment room safety

Gas Detector Requirements - 2021 Edition

The 2021 edition has been accepted by the NBIC Committee and is scheduled for release July 1, 2021. In addition to the 2019 NBIC requirements, the new 2021 NBIC edition includes the following changes:

Part 1:

- Revised carbon dioxide gas detection system requirements for Liquid Carbon Dioxide storage vessels.·

Part 2:

- New requirements for remote visual inspection for confined space entry.
- Several revisions/updates to the inspection requirements for PVHOs (pressure vessel for human occupancy).
- Revised carbon dioxide gas detection system requirements for Liquid Carbon Dioxide storage vessels.

GMA 200 MW-4 Controller

IR 22 CO_2 Gas Transmitter

The NBIC also includes Standard Welding Procedure Specifications (SWPS) and requirements for NO_2 measurement have been strengthened in several specifications.

Gas Detection Solutions for Carbon Monoxide

The EC 28 is a highly advanced fixed system transmitter that can be configured for a wide variety of toxic gases, including CO. The intrinsically safe EC 28 can be used as a “standalone” single point system, or as part of a larger multi-point system.

Gas Detection Solutions for Carbon Dioxide

Where there is fuel gas, there is a need to monitor for CO_2.The GMA 200 MW-4 controller system with the IR 22 transmitter is a cost effective solution for the detection of carbon dioxide. It compensates for the effects of temperature, which results in more accurate readings.

Gas Detection Solutions for PVHO

The GfG IR 29 CO_2 fixed system is ideal for environments where there is a pressure vessel for human occupancy. The intrinsically safe IR 29 can be installed and used in "Ex Zone 0" hazardous locations in which ignitable concentrations of combustible gas or vapor are assumed to be present at all times.

USA and Canada	info@goodforgas.com
Latin America	info@goodforgas.com
Germany	info@gfg-mbh.com
South Africa	info@gfg.co.za
Asia Pacific	sales@gfg-asiapac.sg
Great Britain	sales@gfggas.co.uk
Switzerland	info@gfg.ch
France	alainflachon@gfg-gasdetection.fr
Poland	biuro@gfg.pl
Austria	austria@gfg-mbh.com
Netherlands	info@gfg-gasdetection.nl

smart GasDetection Technologies

GfG Instrumentation, Inc.
1194 Oak Valley Drive, Suite 20, Ann Arbor, MI 48108 USA
Phone: (734) 769-0573 • Toll Free (USA / Canada): (800) 959-0329
Website: www.goodforgas.com • info@goodforgas.com