



BRASCH

ENVIRONMENTAL TECHNOLOGIES

Engineering Presentation

Introduction

1964

Jerry Brasch founds Brasch Manufacturing Company to make Electric Duct Heaters.



2002

Brasch Manufacturing releases the first generation of GSE detectors using new electrochemical sensing technology.



2017

Ray Adams purchases Brasch Manufacturing from Jerry Brasch.



2021

Brasch Environmental Technologies releases an entirely new product lineup with Generation 2.



1994

Brasch Manufacturing begins producing gas detectors with the BGS line.



2008

Brasch Manufacturing releases the GDCP-A.



2019

The Brasch Manufacturing electric duct heater division is sold to ASPEQ Heating. The gas detector division is retained and rebranded as Brasch Environmental Technologies.



2024

Methane, propane, hydrogen, and oxygen join the product lineup to expand detection capabilities to new markets.



Typical Applications

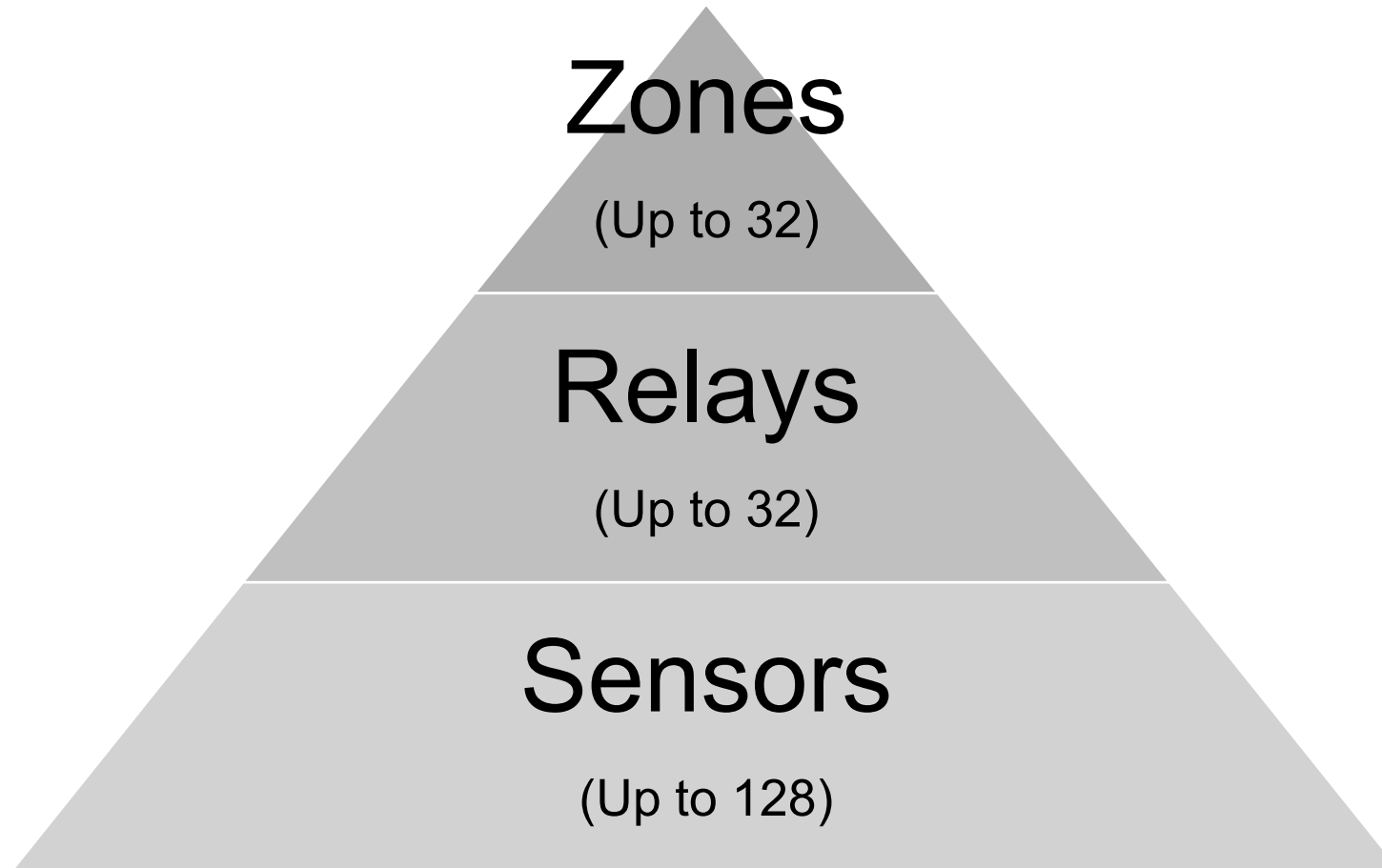
- Commercial Parking Garages
- Condominium and Apartment Garages
- Car and Bus Maintenance Garages
- Warehouses and Factories
- Auto Service and Repair Centers
- Delivery Docks
- Firehouses
- Car Dealerships
- Office Buildings
- Schools
- Postal Facilities
- Wastewater Treatment Plants
- Battery Charging Stations



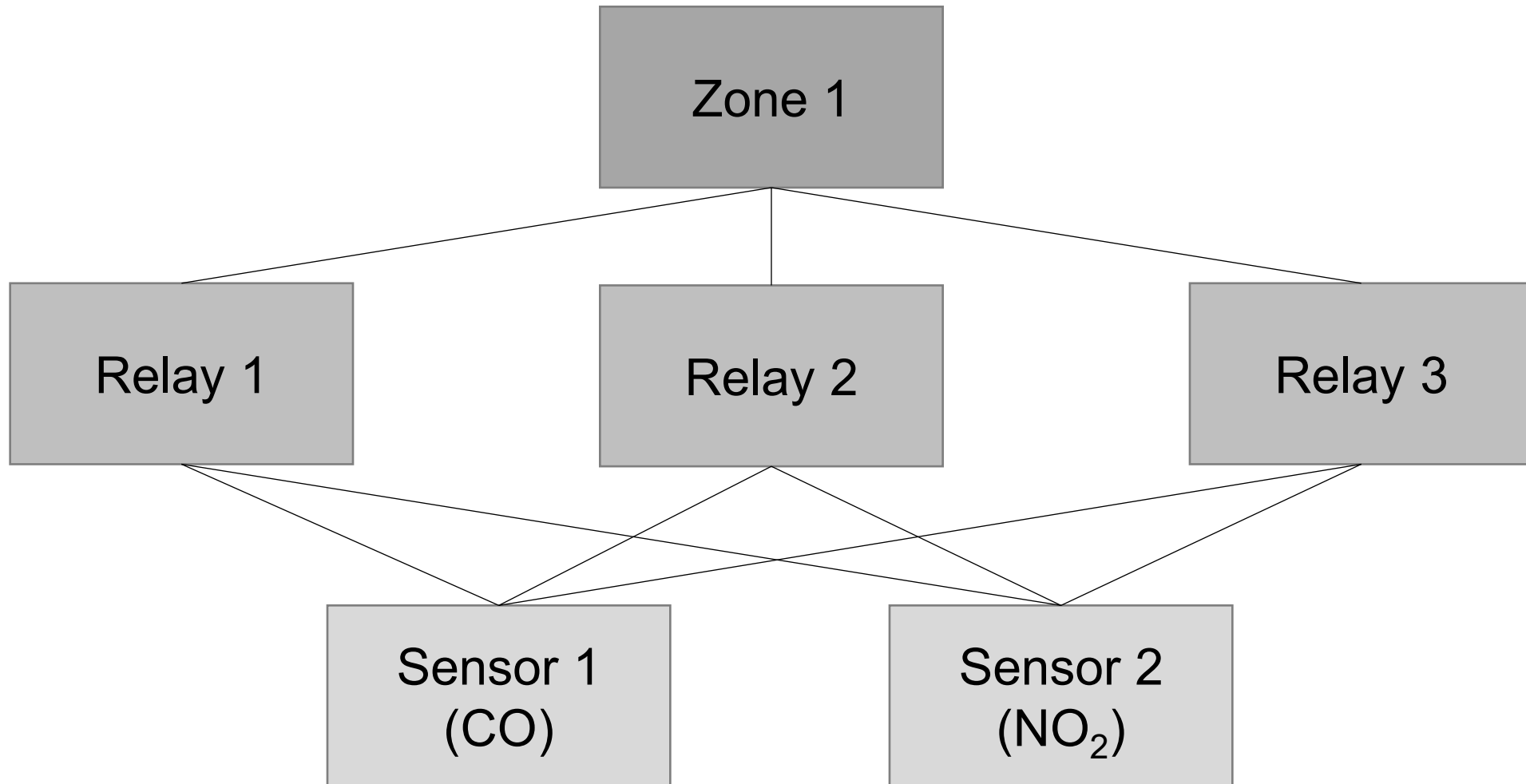
Gases to Detect

- Gasoline Exhaust
 - Carbon Monoxide (CO)
- Diesel Exhaust
 - Nitrogen Dioxide (NO₂)
- Compressed Natural Gas (CNG)
 - Methane (CH₄)
- Liquid Propane Gas (LPG)
 - Propane (C₃H₈)
- Off-Gassing in Battery Charging Stations
 - Hydrogen (H₂)

Basics of Gas Detection

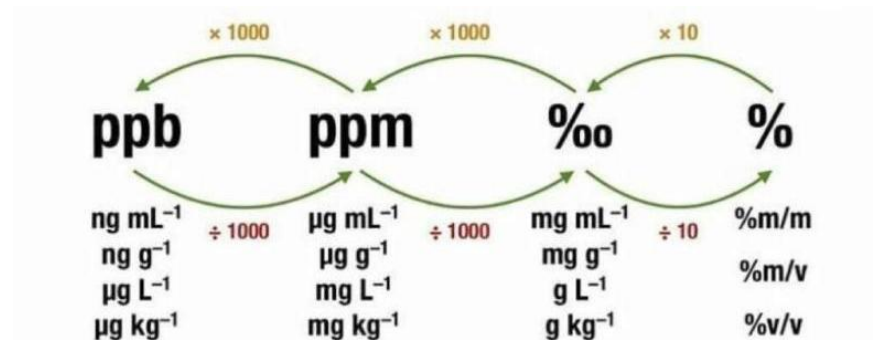


System Configuration



Definitions

- PPM – Parts Per Million
- % V/V – Percent Volume by Volume
- % LEL – Percentage of Lower Explosive Limit
- % LFL – Percentage of Lower Flammability Limit



Standards



Carbon Monoxide

PEL – TWA: 50 PPM

Nitrogen Dioxide

PEL – STEL: 1 PPM

PEL – C: 5 PPM



Carbon Monoxide

REL – TWA: 35 PPM

Nitrogen Dioxide

REL – STEL: 1 PPM



Carbon Monoxide

TLV – TWA: 25 PPM

TLV – STEL: 400 PPM

Nitrogen Dioxide

TLV – TWA: 3 PPM

TLV – STEL: 5 PPM

Variables

- Setpoint
- Time Delay
 - ON and/or OFF
- Analog Outputs
 - 4-20 mA, 0-10 VDC, etc.
- Digital Outputs
 - BACnet, Modbus, etc.

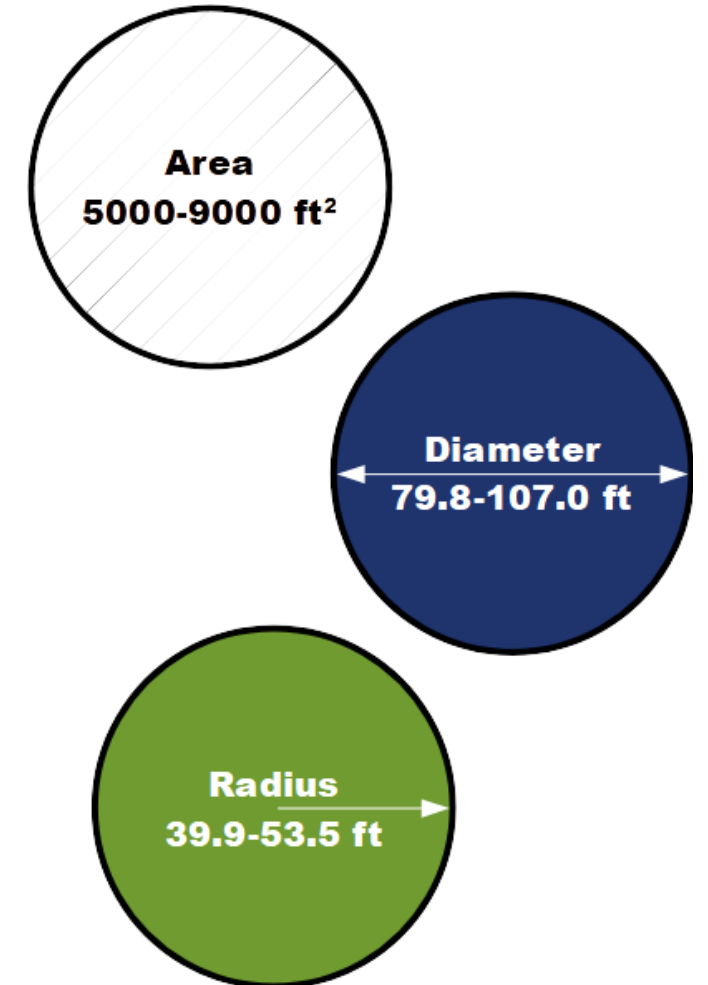
Sequence of Operations

- Normal Operation
- Low Alert
- Medium Alert
- High Alert
- Alarm
- Delays
- Additional Outputs

CO (PPM)	NO ₂ (PPM)
0	0
35	1.0
75	3.0
100	5.0
200	10.0

Estimated Coverage

- Factors to Consider
 - Gas Type
 - Ceiling Height
 - Air Change Rate
 - Application
 - Obstructions
 - Interference



Other Considerations

- Overrides
 - HOA Switch, Thermostat, etc.
- Scheduled Ventilation
 - Summer Ventilation
 - Unoccupied Hours
- Fail-Safe



Gas Detection Products

- GSE Generation 2
 - Standalone Detector
- GDCP-Touch
 - Multi-Zone Control Panel
- Gen 2 Remote Transmitter
 - Universal Remote Transmitter



Standalone Detectors

- Detects CO, NO₂, CH₄, C₃H₈, H₂, and O₂
- Monitors up to 4 Sensors and 36,000 sq. ft.
- User-Adjustable Setpoints, Delays, and Relays
- Built-in Manual Fan Activation
- Rainproof Water Resistance
- Simple Service and Maintenance
- Preconfigured Wiring
- Factory Calibration
- Customized Programming
- Works with New and Existing Building Controls Systems



Control Panel

- Fully Configurable Zones, Relays, Setpoints, Delays, and Outputs
- On-Demand Ventilation Control by Gas Concentration, Timer, Schedule, or User Input
- 7" Full Color LCD Touch Screen
- Monitoring for up to 128 CO, NO₂, CH₄, C₃H₈, H₂, and O₂ Sensors
- NEMA 4X Water and Dust Resistance
- BACnet IP and Modbus RTU Communication for BMS Interfacing
- Customized Factory Programming and Configuration for Every Job



Remote Transmitters

- Detects CO, NO₂, CH₄, C₃H₈, H₂, and O₂
- Rainproof Water Resistance
- Simple Service and Maintenance
- Factory Calibration
- Customized Programming
- Works with GSE Generation 2, GDCP-Touch, and most BMS/DDCS/VFDs



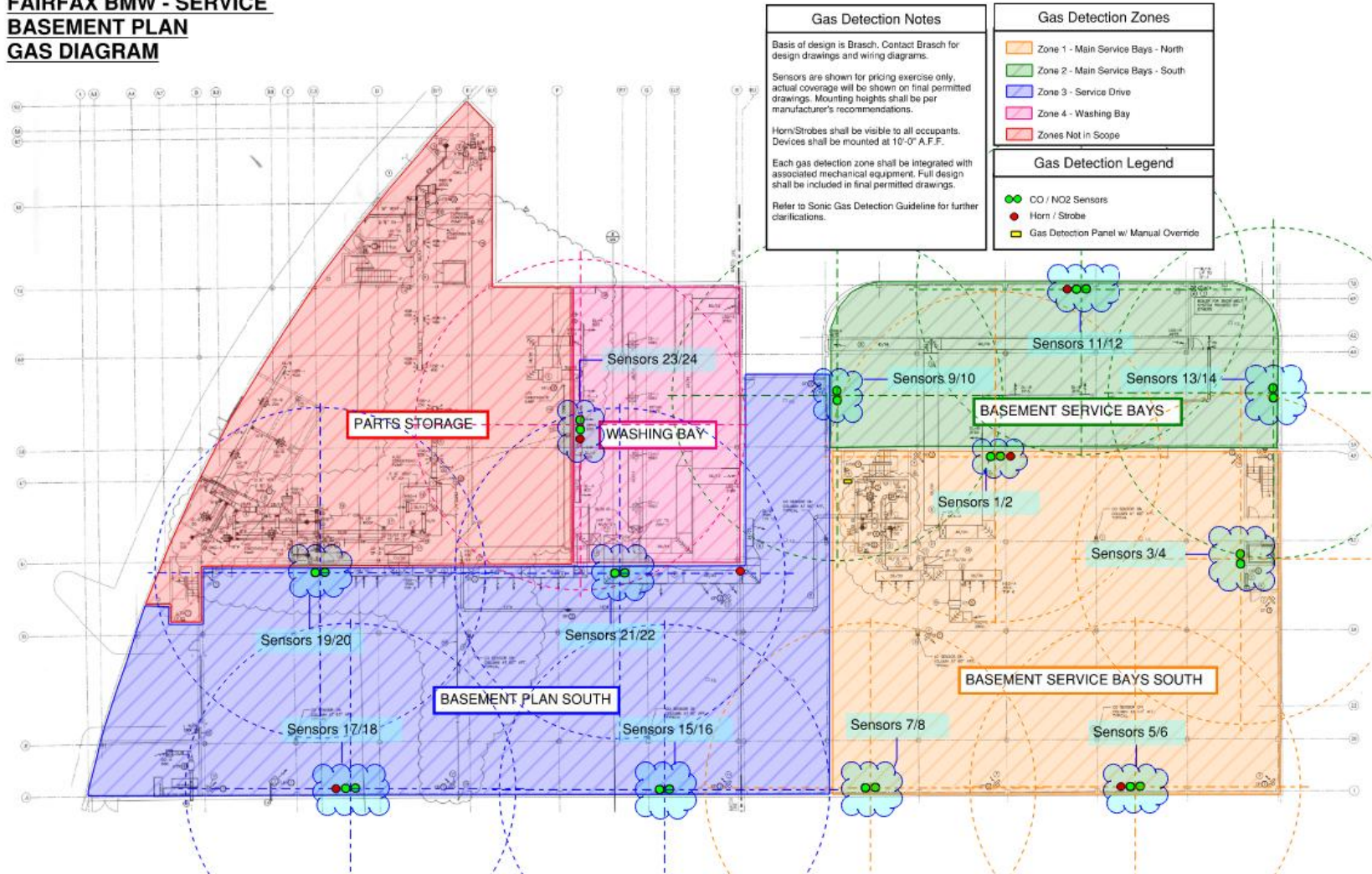
Accessories

- Horn/Strobes
 - 12-24 VAC/VDC or 120-240 VAC
 - 86-105 dB @ 1 m
- Transformers
 - 24 VAC
 - 96 VA, 150 VA, or 300 VA
- GDCP-ExpansionPack
 - 4 Relays
 - 1 Analog Output
 - Signal Repeater



Example

FAIRFAX BMW - SERVICE BASEMENT PLAN GAS DIAGRAM



Maintenance

- Cleaning
 - Keep vents and holes clear of dust and debris
 - Brasch Detectors use louvered vents and slotted drainage holes for airflow
 - If airflow is restricted, proper operation will be compromised
 - Wipe filters clear of any contaminants
 - Each sensor has a filter on top that needs to be clear to function optimally
 - Remove any minor corrosion from circuit boards
 - High humidity environments are especially prone to damage from condensation
 - Use light chemicals
 - Dry completely
 - Never touch electronic components while power is applied
 - Detectors are NOT waterproof – do not perform wash-downs

Testing

- Types
 - Response
 - Ensures the sensor reacts well enough and quickly enough
 - Can be performed with improvised equipment
 - Often referred to as bump testing
 - Analytical
 - Determines the sensor's exact deviation from acceptable tolerance
 - Requires specialized equipment including NRTL certified gas
 - Usually only required for formal inspections
 - Often referred to as a calibration check
- Frequency
 - Depends on state/local codes
 - Brasch recommends testing response once or twice per year
 - Anticipated recalibration timeframe varies by gas type (6 months to 2 years)

Calibration

- Tolerances
 - Maintain within approximately 10-15%
 - May vary depending on state/local regulations
- Test Gas Kit
 - Perform your own calibration using a tank of calibration gas
 - Brasch offers a test gas kit that includes everything required
- Calibration Values
 - CO Sensors: 100 PPM CO
 - NO₂ Sensors: 5.0 PPM NO₂
 - CH₄ and C₃H₈ Sensors: 50% LEL CH₄
 - H₂ Sensors: 50% LEL H₂
 - O₂ Sensors: 0% O₂ (100% N₂), 20.9% O₂ (Zero Air)



Sensor Replacement

- Sensor Modules
 - Pluggable (Hot Swappable)
 - Factory-Calibrated
- Calibration Expiration
 - Quicker and easier than full calibration
 - More cost effective in smaller quantities
- End-of-Life
 - Sensors are completely depleted
 - Module must be replaced



Resources

- Brasch Support

- [Website](#)

- [Project Calculator](#)

- [Education](#)

- White Papers

- Videos

- [Downloads](#)

- Customer Service

- customerservice@braschenvtech.com

- 314-291-0440

- Design Files

- [CSI Specification](#)

- [Drawings and Diagrams](#)

- [BIM Files](#)