

Applications

The OxyTrak 390 flue gas analyzer measures unburned oxygen levels in dirty, aggressive combustion applications including:

- Boilers—all fuels and all types, including marine, recovery and utility
- Furnaces—all fuels and all types, including heat treating, glass and process
- Rotary kilns—ore reduction, cement, alumina processing and others
- Incinerators—industrial, municipal and hazardous waste

Features

- Ex situ diffusion/convection loop design with zirconium oxide oxygen sensor for measurement accuracy and durability
- Sensor housing maintains steady temperature for greater accuracy and longer sensor life
- Automatic calibration and verification
- Optional sensor to measure CO, H₂ and other combustibles
- Corrosion-resistant design with plug-resistant sample path
- Easy installation and sensor replacement
- Suitable for temperatures up to 3182°F (1750°C)

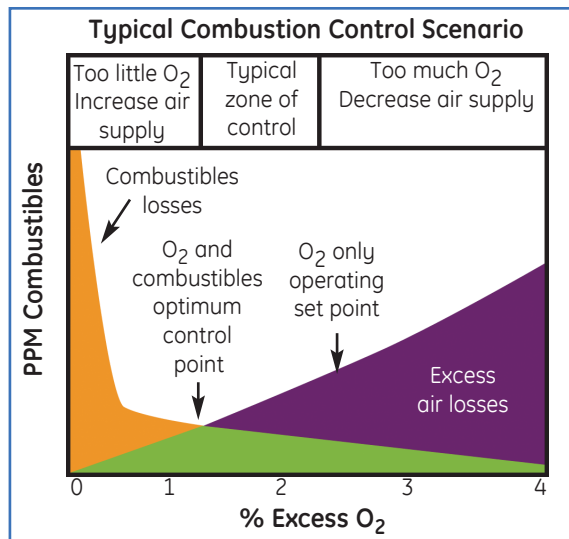
OxyTrak™ 390 Panametrics Flue Gas Oxygen Analyzer

OxyTrak 390 is a Panametrics product. Panametrics has joined other GE high-technology sensing businesses under a new name—GE Industrial, Sensing.



Why Monitor Flue Gas?

In an ideal combustion process, fuel and air burn stoichiometrically to yield only heat, water vapor and carbon dioxide. In reality, burners age, mixing is imperfect, caloric value of fuel varies and firing rates change. These factors change the amount of air required for safe and efficient combustion of fuel. Accurate flue gas analysis minimizes fuel costs and reduces pollution in all combustion processes.



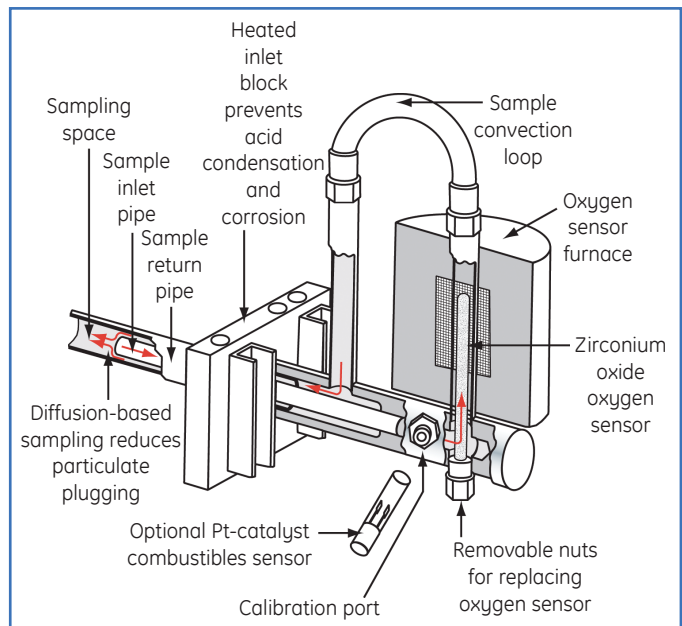
Combustibles applications typically trim burner air supply to run excess oxygen at an optimal level to ensure complete combustion. Reducing excess oxygen reduces fuel costs by improving combustion efficiency.

OxyTrak 390 Series—A Step Ahead of Traditional Flue Gas Analyzers

The OxyTrak 390 combines state-of-the-art measurement technology with a unique sampling design. The result is an accurate, low-cost analyzer that stays on the job for extended periods with minimal maintenance. It responds in seconds to changes in flue gas concentrations of oxygen and/or combustibles, constantly providing the information you need to keep your boiler or furnace operating at maximum efficiency. OxyTrak 390 special design features include:

Stable, Accurate, Wide-Range Oxygen Sensor

The zirconium oxide oxygen sensor, is housed in a furnace that maintains the O₂ sensor at a steady 1292°F (700°C). The temperature stability improves accuracy and extends the sensor's life.



Unique OxyTrak 390 ex situ diffusion convection loop design is better than traditional flue gas analyzers because it provides a clean gas to the sensor and resists plugging.

Corrosion-Resistant Design

The manifold heater block located at the sample inlet prevents manifold corrosion due to flue gas acid condensation and corrosion is prevented, ensuring maximum analyzer life with minimum maintenance.

Optional Platinum-Catalyst Combustibles Sensor

A unique platinum-catalyst sensor is available to measure levels of combustibles (CO plus H₂). This is useful for detecting incomplete combustion or defective burner equipment.

Simple Installation

The OxyTrak 390 can be installed on a flue or furnace on an existing flange mount. Because it utilizes the ex situ convection loop design, reference air is not needed.

Fast, Easy Routine Maintenance

Calibration is easily achieved by introducing a calibrated gas through the convenient calibration port and making an automatic adjustment via the display controller. For sensor replacement, there is no need to remove the entire analyzer from the flue. Since the sensor is ex situ, it can be quickly removed with basic tools.

Plug-Resistant Sample Path

A diffusion-based sampling technique greatly reduces the entry of particulates into the analyzer. If necessary, quick and easy cleaning is possible without disassembling the unit.

OxyTrak 390 Specifications

Performance

Accuracy

- Oxygen: $\pm 0.1\% \text{ O}_2$ (0 to 10% O_2) and $\pm 0.2\% \text{ O}_2$ (10 to 25% O_2)
- Combustibles: ± 20 ppm or $\pm 5\%$ of reading, whichever is greater (Optional)

Repeatability

- Oxygen: $\pm 0.05\% \text{ O}_2$ (0 to 10% O_2) and $\pm 0.1\% \text{ O}_2$ (10 to 25% O_2)
- Combustibles: ± 10 ppm or $\pm 2\%$ of reading, whichever is greater (Optional)

Output Resolution

- Oxygen: $\pm 0.01\% \text{ O}_2$
- Combustibles: $\pm 1\%$ of full scale (FS) (Optional)

Stability

- Oxygen: $< 0.2\% \text{ O}_2$ per year
- Combustibles: < 200 ppm per year (Optional)

Measurement Range

- Oxygen: 0 to 1% to 0 to 100% O_2 , user-selectable
- Combustibles: 0 to 500/1000/2000/5000/10,000 ppm; 0 to 2% (Optional)

Process Pressure Effect

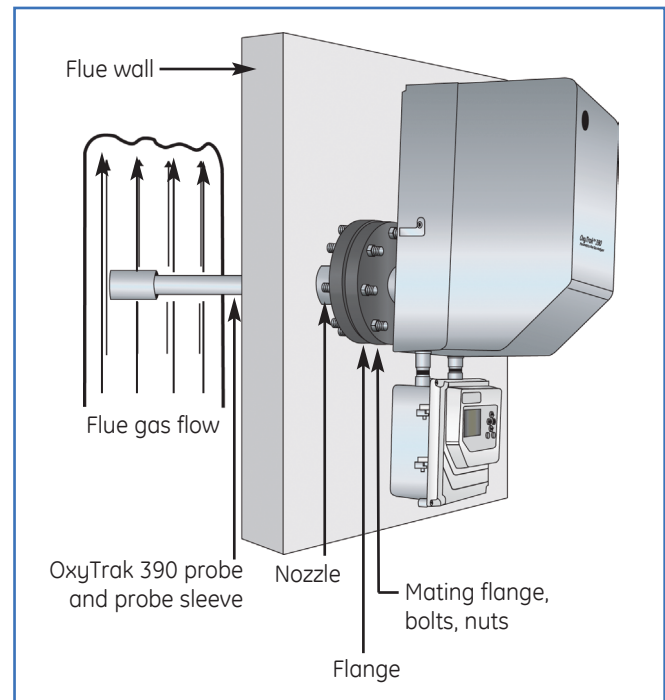
$> \pm 0.05\% \text{ O}_2$ per psi (bar) pressure compensation

Supply Voltage Effect

$> \pm 0.05\% \text{ O}_2$

Response Time

- Oxygen: 90% step change within 20 s typical
- Combustibles: 90% step change within 20 s typical (Optional)



Typical horizontal flue gas analyzer installation

Functional

Display

Intuitive, state-of-the-art microprocessor-based controller displays readings for up to three user-specified process conditions (% O_2 , ppm combustible, furnace temperature, heater block temperature)

Output

- Analog: three linearized, isolated, 4 to 20 mA outputs, user selectable, field programmable for O_2 or combustibles over any range
- Alarm: eight configurable relays:
 - Oxygen; high and low
 - Combustibles; high and low
 - Autocalibration or autoverification, two relays for O_2 and/or two relays for combustibles
 - System fault
 - Blowback feature
- Digital
 - Standard: PanaView™ via RS485 or RS232, user selectable

OxyTrak 390 Specifications

Ambient Temperature Range

- Analyzer: -22°F to 158°F (-30°C to 70°C)
- Analyzer, optional: High dew point version available
- Display/controller: -4°F to 140°F (-20°C to 60°C)

Sensor Temperature

- Standard: 1292°F (700°C)
- Optional: 1418°F (770°C)
- Optional: 1493°F (812°C) for high sulfur applications

Flue Gas Temperature Range/Probe Material

- Up to 1200°F (650°C)/316 stainless steel
- 1200°F to 1750°F (650°C to 950°C)/MA253 stainless steel
- 1750°F to 2900°F (950°C to 1600°C)/Mullite
- 2900°F to 3182°F (1600°C to 1750°C)/Alumina

Warm-Up Time

50 minutes typical

Calibration Verification

3 modes: Manual, AutoCal and AutoVerify
Calibration gas flow rate: 240 ±10 cc/min

Physical

Sensor Type

- Oxygen: Stabilized zirconium oxide
- Combustibles: Catalytic-combustion, platinum RTD (Optional)

Wetted Materials

316 stainless steel

Probe Lengths

- Standard: 24 in (0.6 m), 39 in (1 m) or 55 in (1.4 m)
- Other lengths available upon request

Overall Dimensions (h x w x d)

22 in x 17 in x 12 in (559 mm x 431 mm x 305 mm), not including mounting flange or probe and probe sleeve)

Total Weight (19 in (483 mm) probe)

25 lb (11.4 kg)

Mounting

- Standard: 1 1/2 in MNPT
- Optional: DN80 PN16, 3 in and 4 in CS flanges

Housing

- Analyzer: Type 2; IP52

Display/Controller

Enclosure and User Interface

- External 6-button keypad for field programming
- Large, 128 x 64 pixel LCD graphic display
- User-configurable display
- Local or remote installation of controller display (25, 50 and 100 ft standard cable lengths)
- Proprietary Proportional Integral Derivative (PID) control circuit (patent pending) provides the highest level of O₂ measurement accuracy via exceptional sensor furnace temperature control
- Weatherproof Type 4X, IP67 enclosure
- Size (h x w x d): 8.8 x 8.2 x 3.6 in (220 x 210 x 90 mm)

Power

- Supply: 115/120 or 230/240 VAC
- Consumption: 350W

Output Load

600 Ω

European Compliance

Complies with EMC Directive 89/336/EEC, 73/23/EEC LVD (Installation Category II, pollution degree 2)



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