UPC·MARATHON

OXYFIRE™ SENSOR
Installation Requirements

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DISCLAIMER:

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TECHNICAL ASSISTANCE

For all questions or concerns regarding the operation of the **Oxyfire™**, please consult the last page of this manual for contact information.

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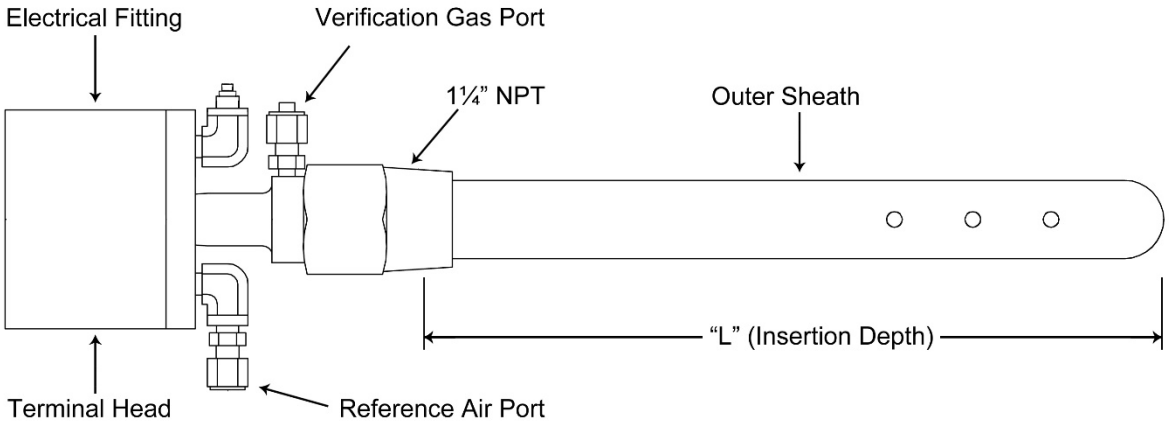
1 INSTALLATION REQUIREMENTS

The OxyFire™ is a true in-situ sensor where the active element is the tip of the sensor that must be located in the gas stream of the process. The sensor is installed directly in the combustion zone, close to the combustion source. It offers a direct, continuous measurement without extractive sampling or cooling. The response time to changes in the process is less than 1 second. Stability is less than 1% deviation in signal output over the life of the sensor. The accuracy of the sensor output does not exceed ±2% of the measured variable (Example: process variable = 2%, accuracy is ±.04%).



The sensor is manufactured with a type "B" thermocouple that provides the process temperature necessary for the complete measurement. The outputs from the sensor are two millivolt signals: one for oxygen and one for temperature. Electrical power is not connected to the sensor since there is no heater requirement. Calibration gases and maintenance man-hours are not needed because the sensor does not require calibration. Sensor verification and diagnostics are available either through the instrumentation or a verification gas port on each sensor.

The type of furnace and your particular process will determine the actual length and sheath material of the sensor. Standard lengths range from 6" to 42". Silicon carbide, alumina, and hi-temp alloy are the standard sheath materials and the sensors are available in many configurations.

2 General Requirements for Sensor Installation

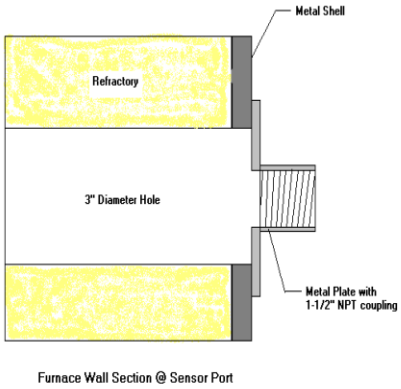
The sensor must be installed where the process temperature is between 1200°F-3000°F (650°C-1600°C).
The atmosphere should be moving and not stagnant.
Ambient temperature at terminal head should not exceed 300°F.
The sensor should be protected from direct flame contact and should be located in an area where combustion is complete.
The sensor requires clean, dry reference air (50cc/min to 150cc/min at a pressure of 2psi maximum).

3 General Mounting Instructions

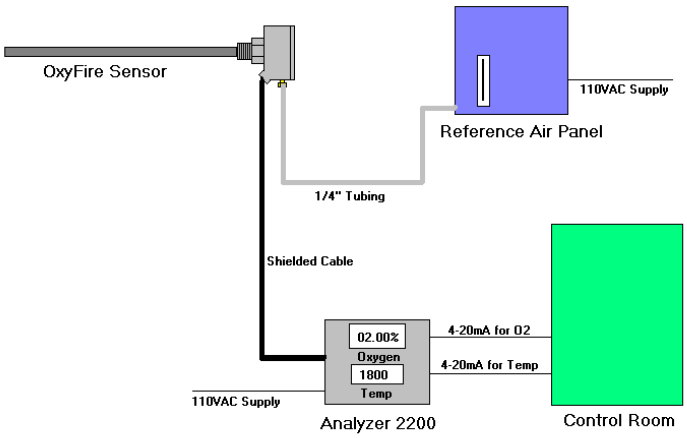
May be mounted horizontally or vertically depending on type of furnace and particular process.
Recommended hole through the refractory is 3” diameter (perpendicular and at right angles to exterior surface).
A 1½” NPT threaded coupling is attached to exterior surface of a furnace with a metal shell. This connection must be airtight.
In refractory exterior furnaces, a 3” diameter hole should be used. Use ceramic fiber (such as Kaowool™) around the sensor followed by refractory mud to seal air leaks.
An 18 gauge stranded copper wire, 4 conductor, twisted – shielded pair, teflon insulation cable should be used to connect sensor outputs to instrumentation. Belden #89418 cable or equal.
Metal ¼” tubing is used to connect sensor reference air.

4 Installation in Hot Process: “CAUTION – Thermal Shock”

Use a marker to mark 1” increments along the sensor length.
Using stiff high temperature alloy wire, measure the true depth of the refractory taking care to measure all the way around the port.
Insert the sensor slowly at a rate not faster than 1” every 5 minutes.
Keep the sensor supported during installation.
If a pipe coupling was used for mounting, apply teflon thread tape to sensor threads for sealing. Hand tighten sensor, then add a quarter turn with a wrench. **Over-tightening may cause sensor breakage.**
NOTE: Thermal shock, over tightening, load strikes, negligence, etc are not damages covered by the MMI Warranty.



Furnace Wall Section @ Sensor Port



5 CUSTOMER SUPPORT

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