

COMBUSTION CONTROL

Energy & Environmental Solutions for Sulfuric Acid Producers



- Fuel Savings
- NOx Reductions
- Higher Sulfuric Acid Quality
- Longer Refractory Life

Proven technologies for: Thermal Oxidizers Package Boilers Cracking Furnaces ...And More

Energy & Environmental Solutions for Sulfuric Acid Producers

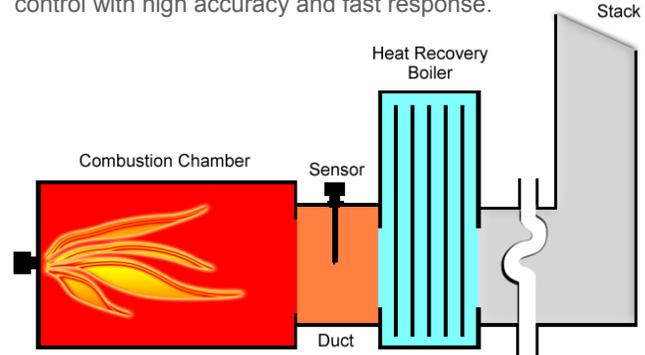


Where Does the Real Problem Lie?

In any combustion reaction, oxygen and fuel are mixed to give off heat and combustion products. Typically a fuel, such as natural gas or oil, is combined with air. Air contains only 20.9% oxygen with the remaining 79.1% consisting of nitrogen and other gases that are not required for combustion. These other components detract from the combustion process by absorbing heat, causing lower efficiency, and creating emissions. Inaccurate control of air/fuel ratio produces quality issues with both the manufactured SO₂ precursor and H₂SO₄ final product. This can be costly to the manufacturer.

In the past, two major types of oxygen analyzers were found in the acid industry: low temperature in-situ and extractive sampling types. Extractive units require excessive maintenance due to the temperatures and destructive environment of acid production. Heaters, pumps, sample lines and cells require continuous attention and the units require regular calibration. The sample port is typically downstream from the combustion zone and does not offer real time measurements. The low

temperature in-situ sensor is typically located after the heat recovery boiler. It is susceptible to erroneous readings due to infiltrated air (Venturi Effect) in ducts and seals. Though both types work in the process, they do not provide the ability to control with high accuracy and fast response.

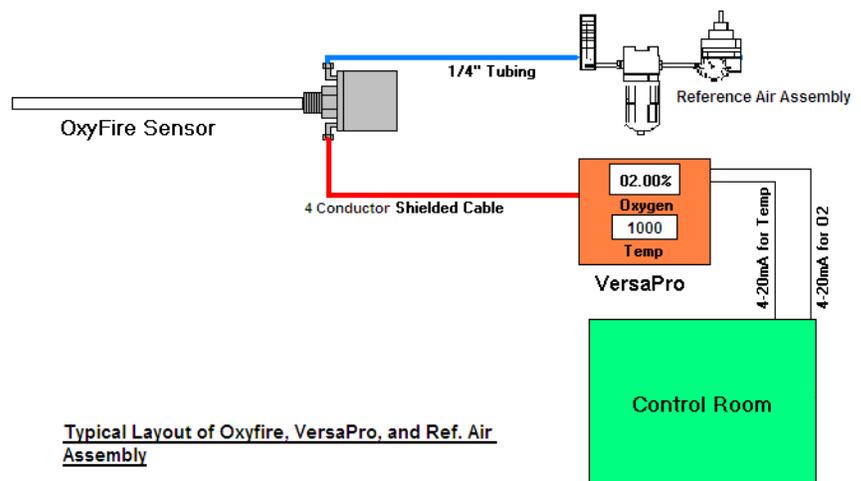


The Solution “Measure where it matters!”

Marathon's Oxyfire™ high temperature in-situ oxygen sensor meets control requirements while eliminating many maintenance issues with other sensors. The Oxyfire™ sensor does not require sample pumps, heaters, filter systems, calibration, etc. The sensor has an operating temperature range of 550°C to 1600°C (1050°F to 3000°F) and is therefore located directly in the gas stream at the combustion chamber exit before the heat recovery boiler. The placement of the sensor couple with the real time measurement provides very fast and accurate control of the combustion process. The sensor is combined with the electronics package to deliver the oxygen measurement and the sensor/process temperature to the process control system. In some extreme conditions, a protection tube is required to extend the life of the sensor and provide a higher return on investment.

A basic Oxyfire™ System for the sulfur combustion application consists of the following:

1. Oxyfire™ XR style sensor
2. VersaPro™ or Oxymit™ Transmitter Electronics
3. Sensor Reference Air Assembly



Typical Layout of Oxyfire, VersaPro, and Ref. Air Assembly

Results: Cost Savings + Eco-Efficiency

The use of the Oxyfire™ System results in consistent higher quality and greater efficiency with a minimum of maintenance and down time. Lower fuel consumption, higher quality and increased throughput provide rapid return on investment (ROI).

USA	+1-513-772-1000	FRANCE	+33-03-8148-3737
Toll free N.A.	+1-800-547-1055	GERMANY	+49-7161-94888-0
CHINA	+86-10-5895-7183	POLAND	+48-32-296-66-00

upc.sales@group-upc.com
www.group-upc.com