



Emerson combustion analysis solutions improve boiler efficiency and uptime.

Rosemount™ Combustion Analysis Solutions
Reduce fuel costs, minimize flue gas emissions and meet regulatory requirements.



Improve boiler efficiency and uptime.
Reduce fuel costs and minimize flue gas emissions.
Meet regulatory requirements.

YOU CAN DO THAT.

With combustion analysis from Emerson, you'll create a more efficient operation with lower operating costs while meeting regulatory compliance. No one offers a more complete, trouble free solution than Emerson.

Partner with Emerson to:

- Improve boiler efficiency
- Lower fuel costs
- Increase safety
- Improve boiler and system uptime
- Minimize flue gas emissions
- Reduce installation and maintenance costs
- Meet regulatory requirements
- Update existing equipment seamlessly



THE PLANTWEB® DIFFERENCE

Emerson's Rosemount™ analytical instruments are part of the PlantWeb fieldbased architecture; a scalable way to use open and interoperable devices and systems to build process solutions for the future. This architecture can reduce capital and engineering costs, reduce operations and maintenance costs, increase process availability, reduce process variability and streamline regulatory reporting.

Emerson's **Smart Wireless** products and solutions extend PlantWeb predictive intelligence into areas that were previously out of physical or economic reach, opening the door for new possibilities in process improvement. Remote locations, physical obstructions, and the high cost of engineering and integrating new technologies are no longer the barriers they were.

Thousands of users see the results every day. PlantWeb's network of predictive intelligence enables you to detect process and equipment problems, with or without wires, even before they occur. So you can move from reactive to proactive and profitable management.

PlantWeb can help:

- Reduce installation, energy and maintenance costs.
- Lower process variability and improve process diagnostics and safety.
- Enhance product quality and increase throughput.
- Meet or exceed regulatory requirements.

YOU CAN HAVE CONFIDENCE IN SOLUTIONS FROM EMERSON. THESE CUSTOMERS DO:



"When operating a coal-fired boiler, the reliable measurement of oxygen is critical for safe and efficient operation. Calibration and verification of our existing Rosemount in situ oxygen probes can be accomplished in minimal time with minimal effort. Their individual readings can be used to help detect abnormal burner performance. Rosemount's analytical in situ oxygen probes have provided us years of reliable service without failure."

John Farmer, Computer & Instrument Supervisor
East Kentucky Power Coop., Dale Power Station



"The measurement of oxygen is critical to the operation of our CCR regenerator. The extractive analyzer system we had been using was frequently getting plugged with catalyst fines and condensation, and caused 7-8 shutdowns each year over a two year period. Rosemount's in situ oxygen probes place the sensing cell into the process and has not plugged yet. We now operate the process with complete confidence in the oxygen reading."

Scott Hailey, Lion Oil, El Dorado, Ark.



6888 In Situ Flu Gas Oxygen Transmitter for General Combustion Analysis

The 6888 provides accurate measurement of the oxygen remaining in the flue gases coming from any combustion process. By maintaining the ideal level of oxygen, optimal efficiency is gained, and the lowest levels of NO_x, CO, and CO₂ are produced.

- Outstanding accuracy— + or - .75% of reading or .05% O₂
- Special cells for tough service in SO₂ and HCL
- No moving parts or sampling apparatus, resulting in an extremely reliable analyzer
- Probe lengths are available from 18" to 12', and a slip mounting option
- Calibrations may be performed online, while the furnace is in operation
- Heavy wall probe tubes are available for applications where fly-ash erosion is a problem
- Fully field repairable
- Approvals for Explosion Proof service are available



Oxymitter In Situ Flu Gas Oxygen Transmitter for Hazardous Area Combustion Analysis

Oxymitter transmitters provide the optimum in reliability and accuracy, giving your operators the confidence to set combustion fuel/air ratio to the most efficient levels.

- Accuracy \pm .75% of reading or .05% oxygen
- 700°C (1300°F) maximum process temperature (1050°C (2000°F) with bypass accessory)
- Electronics integral to probe or remote-mounted
- Completely field-repairable
- HART® or FOUNDATION™ fieldbus communications
- High sulfur/HCL versions available
- Advanced diagnostics, including “calibration recommended”
- Optional autocalibration

Advanced Software features for 6888 and Oxymitter Analyzers

(available with optional Xi electronics)

Heaterless operation

The 6888 oxygen analyzer employs a heater and thermocouple to maintain a temperature setpoint at either 550°C (1022°F) or 736°C (1357°F). Temperature control is maintained within $\pm 1^\circ\text{C}$. At process temperatures above the selected temperature setpoint, the probe heater remains off and the electronics calculates O₂ based on process temperature.

It should be noted that cell life will be reduced by continuous operation at temperatures above 800°C (1472°F). If process temperatures are expected to be continuously above 750°C, we recommend the use of a bypass or probe mounting jacket accessory.



Acid-Resistant Stoichiometer Cell

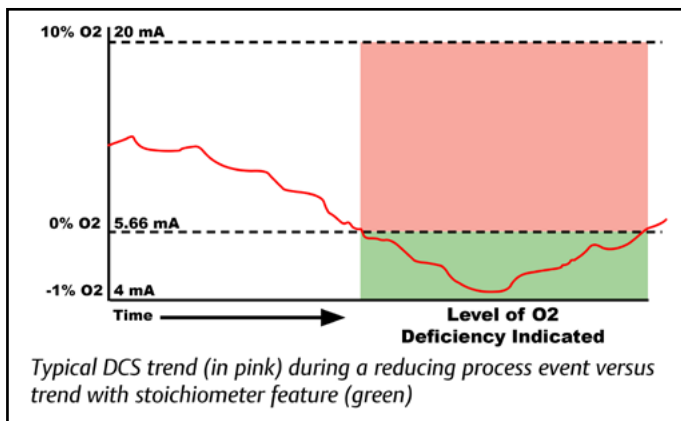
Stoichiometer

Process upsets can sometimes cause a combustion process to go into substoichiometric or reducing conditions. The oxygen readings from one or more probes may decline all the way to zero. Operators frequently misinterpret a 0% O₂ indication as a failed analyzer. The stoichiometer cell will measure the amount of oxygen deficiency during these reducing conditions. The trends in your DCS can be set up for a lower range limit of -1 or -2% oxygen to depict the level of oxygen deficiency.

The operator can see:

- The O₂ reading is alive
- The process is in reducing conditions
- Whether actions to recover are having the desired effect.

These types of events do not occur frequently, but knowing the parameters of the situation prevents overcorrecting while coming out of the reducing condition.





OPM 3000 & 4000 Opacity Monitors

The OPM 4000 is an EPA certifiable double pass transmissometer which uses a unique frequency pulsed incandescent lamp to measure opacity. This easy-to-install unit can be set up and serviced by a single field technician and meets all the current EPA requirements. The OPM 3000 uses the same technology for its measurement without the factory certification for EPA compliance. This monitor can be used for a variety of applications where EPA reporting is not required but particulate or smoke density may be a helpful process measurement such as bag house or electrostatic precipitator monitoring.

- Single source dual detector measurement compensates for lamp aging
- Control room display of opacity or particulate
- Simple alignment with no additional tools required
- Improved sensor and sample block temperature stabilization
- On-stack maintenance display for easy audits and trouble shooting



OCX 8800 O₂/Combustibles Transmitter

This rugged, compact unit has two of the world's most reliable and accurate sensors – the same high-performance oxygen sensor as the Oxymitter – while its unique combustibles detector has proven to be the most reliable on the market.

- Rugged sulfur resistant catalytic bead sensor
- Improved temperature control and heater design
- Vacuum Fluorescent Local Operator Interface (LOI)
- LOI safety lock-out
- Improved sensor and sample block temperature stabilization
- Line voltage diagnostics
- Calibration check and abort feature
- Backward compatibility to upgrade your existing OCX
- HART® communications



CCO 5500 Carbon Monoxide Analyzer

The CCO 5500 is an across-the-stack infrared gas filter correlation analyzer used to improve combustion efficiency. This easy to configure and install device can be used to help reduce unburned fuel as a result of incomplete combustion. The across the stack CO-specific measurement minimizes the effect of stratification and can help reduce energy costs for any boiler, process heater or other fossil fuel fired combustion process in your facility.

- Easy to use, program and operate
- Easy to understand control room diagnostics
- In-situ/across the stack measurement
- Rugged easy to install & align optics



Pneumatic Power Positioners

Rosemount's analytical power positioners have been satisfying exacting control requirements for decades.

- Thrust-type piston actuators specifically designed to actuate separated overfire air dampers (SOFA) on tangentially fired furnaces
- Pneumatic fan/damper actuators provide repeatable, reliable service for boiler air flow control



Continuous Emissions Monitoring Systems (CEMS)

Emerson offers cost-effective, pre-engineered CEMS packages for applications that require monitoring of up to five gases (and opacity when needed).

- Measurement options: CO, CO₂, SO₂, NO, NO_x, O₂, THC and opacity
- Fully pre-engineered – designed for maximum uptime
- Utilizes Emerson's own industry-preferred analyzers
- Self-diagnostics
- Manufactured under ISO 9001-certified quality standards
- Optional installation, startup, certification and ongoing service programs available



POWER INDUSTRY



Large Boilers

Heat rate improvement in any large combustion process has never been more critical. Rosemount analytical oxygen probes are the ideal tool to help you establish the fuel/air ratios that will yield the best efficiency while reducing NO_x levels. Careful probe placement can also provide a diagnostic tool for balancing burners and/or coal mills. Trust your process optimization to Emerson – the inventors of the original zirconium oxide technology that is still the industry standard for performance.



Gas Turbines

In today's world of high energy demand, Emerson offers low-cost, reliable analytical packages with short deliveries for gas turbine and other combustion processes. Our Gas Chromatographs provide an accurate on-line measurement of natural gas BTU value for more efficient control of turbine combustion. Also, our emissions monitoring packages are designed to meet US EPA and local regulations, and are ideal solutions for Selective Catalytic Reduction (SCR) applications. And our pre-engineered solutions can get your operation up and running quickly.

REFINING/PETROCHEMICAL



Process Heaters Catalyst Regeneration Sulfur Incinerations

Energy efficiency has gained renewed importance in process industries. Better control of process units has minimized the amount of waste fuel gas available for burning in boilers and furnaces at the same time as the price of make-up natural gas has skyrocketed. Pressures from local and national environmental regulatory agencies to reduce NO_x and other pollutants require better control for all combustion processes, such as process heater furnaces, boilers, incinerators, spent acid furnaces and catalyst regeneration processes.

Emerson offers solutions for all of these applications including emissions monitoring systems. Outstanding reliability and durability of Rosemount's analyzer designs will keep you operating at maximum throughput.

KILNS



Cement and Lime Kilns

For the most severe environments in your plant, Emerson offers a variety of gas measurement solutions from

REFINING/PETROCHEMICAL



Industrial Boilers

The boiler house is typically the largest user of fuel in any facility and the increase in fuel prices requires that the boilers be operated at the most efficient levels possible. A reliable oxygen analyzer is a key tool for stationary engineers in establishing the ideal fuel/air ratio for combustion.

Many states are requiring some smaller boilers to operate a continuous emissions monitoring system (CEMS).

*WE INVENTED THE ORIGINAL
ZIRCONIUM OXIDE
TECHNOLOGY THAT IS STILL
THE INDUSTRY STANDARD
FOR QUALITY AND RELIABILITY.*

high-temperature oxygen analyzers to various installation modifications to suit the application. Rugged Rosemount's analyzers supply accurate and reliable measurements, even in the harshest conditions. Some kilns can qualify for alternate fuel combustion which may require additional environmental monitoring. Emerson offers rugged analyzers to meet all your reporting requirements.

COMPLETE ANALYTICAL SOLUTIONS FROM EMERSON

Emerson is the world's largest provider of gas chromatography, process gas, combustion and environmental analysis solutions.



GAS CHROMATOGRAPHY SOLUTIONS

Rosemount's analytical gas chromatographs are the world leaders in process gas measurement, separating process gas into identifiable components. Our family of chromatographs has a worldwide reputation for accuracy, repeatability, and dependability.

LIQUID ANALYSIS SOLUTIONS

Emerson is the world's premier provider of liquid analysis solutions. Our expertise, unbeatable customer service and support worldwide help our customers maximize process performance, productivity, and profitability. We offer a complete range of Rosemount's analytical instruments and sensors for the continuous online measurement of pH, ORP, conductivity, dissolved oxygen, ozone, chlorine, and turbidity.

FLAME AND GAS DETECTION

For nearly 20 years operators and engineers alike have made the Net Safety brand of flame and gas detection their preferred choice. Our fixed toxic and combustible gas detectors, flame detectors, and ultrasonic gas leak detectors, deliver rock-solid performance. They also simplify the day-to-day operation, lower operating costs and enhance overall safety coverage for your plant.

To contact Emerson Automation Solutions, call 855-724-2638 or see us on-line at Emerson.com/RosemountGasAnalysis

Emerson offers a complete trouble-free combustion analysis solution.



OPM 3000 & 4000
Opacity Monitors



OCX 8800 O₂/
Combustibles Transmitter



CCO 5500 Carbon
Monoxide Analyzer



6888 In Situ Flu Gas
Oxygen Transmitter

ROSEMOUNT™

You'll create a more efficient operation with lower operating costs and meet regulatory compliance.

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CMB-BRO-Combustion-Analysis-Solutions



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