

PRODUCT DATA SHEET

WDG-V HP Series Combustion Analyzer

Close-coupled convective flue gas analyzer for high-particulate processes

The WDG-V HP series analyzers mount directly on the combustion process and are designed for continuous measurement of excess oxygen (O₂), combustibles (CO+H₂), and hydrocarbons, including methane (CH₄), in flue gas applications containing high levels of particulate. The WDG-V HP is ideal for combustion optimization on applications in cement and lime kilns, foundry and metals production furnaces, power and steam boilers (coal, wood waste, and heavy oil-fired), and black liquor recovery boilers.

Reliability

The WDG-V HP leverages a unique "chimney effect," convective sampling technology that does not require an aspirator, which reduces the velocity of the gas to eliminate the problem of "sand blasting" the probe and minimizes particulate plugging up the inner sample plumbing.

Accuracy

This analyzer utilizes the proven technology of zirconium oxide for a reliable excess oxygen measurement. In addition, catalytic detectors measure combustibles within 0-2000 parts per million for combustion optimization and methane & hydrocarbons within 0-5% to monitor for fuel leaks and loss of flame during start-up, light-off, and normal operation.

Serviceability

The WDG-V HP is designed with the technician in mind. All parts are easy to reach and can be replaced using standard tools without having to remove the analyzer from the flange, enabling quicker turnaround and saving technician time.



KEY BENEFITS

- Designed for high-particulate processes
- Ultra-accurate measurement of O₂ with industry-proven zirconium oxide sensor
- Suitable for flue gases up to 1537°C (2800°F)
- Digital communications via Modbus and Ethernet
- Completely field-serviceable

APPLICATIONS

- Rotary kilns
- Power boilers
- Recovery boilers
- Multiple hearth furnaces

KEY MARKETS

- Cement and lime
- Sludge incineration
- Pulp and paper

PERFORMANCE SPECIFICATIONS

Sensor specifications

Principle of operation	Zirconium oxide for excess oxygen (O ₂) measurement; hot-wire type catalytic bead detectors for combustibles (CO+H ₂) and methane (CH ₄) measurements
Output range	Oxygen: From 0-1 to 0-100% Combustibles: From 0-2,000 ppm to 0-10,000 ppm Methane: From 0-1% to 0-5%
Accuracy	Oxygen: $\pm 0.75\%$ of measured value or $\pm 0.05\%$ O ₂ , whichever is greater Combustibles: $\pm 2\%$ of full scale output range or ± 40 ppm, whichever is greater Methane: $\pm 5\%$ of full scale output range or ± 2500 ppm, whichever is greater
Response	Oxygen: 90% of a step change < 30 seconds with 24" probe to calibration gas* Combustibles: 90% of a step change < 30 seconds with 24" probe to calibration gas* Methane: 90% of a step change < 30 seconds with 24" probe to calibration gas*
Analog output	3 isolated linear current outputs for oxygen. Each output can be 4-20 mA, 0-20 mA, 20-4 mA or 20-0 mA and is fully scalable. NAMUR configurable. Hold or track during calibration. Max. load 1200 ohms
Alarms	5 independent, NO alarms. Set relays to energize or de-energize on alarm
Contact rating	0.5A, 30V, 10VA max. non-inductive load, AC or DC
Digital communication	2-wire Modbus RTU, 57.6 Kbaud
Configuration	Modbus RTU, AMETEK PC configuration software, or AMEView HMI
Diagnostics	Cell and detector age tracking, cell resistance, calibration required, analog current verification
Calibration	Calibrate and store calibration data. Selectable calibration gas run time and process recovery time. Timed automatic calibration with optional Remote Calibration Unit
Sample pressure	Subatmospheric, ± 10 in. water gauge
Max sample dew point	200°C (392°F)
Max flue gas temp / probe type / length	1300°F (704°C) / 316 SS / 24" - 48" (61 cm, 91 cm, 122 cm), 1875°F (1024°C) / 310 SS / 24" - 48" (61 cm, 91 cm, 122 cm) 2800°F (1537°C) / Ceramic / 24" - 48" (61 cm, 91 cm, 122 cm)
Environment	Ambient temperature: -20 to +60°C (-4 to 140°F), Relative humidity: 10 to 90%, non-condensing
Enclosure	Hinged IP65 (Type 4X and NEMA 4X), weather-resistant, stainless steel, available for Class I Div 2 or ATEX/IECEX Ex pzc IIC T3 Gc with purge
Power requirement	120 or 230 VAC +/- 10%, 47-63 Hz; 740 VAC max
Calibration gas requirement	Use calibration gases at 0.70 kg/cm ² (10 psig), 0.7 L/min, (1.5 SCFH); O ₂ Span Gas: Air or from 1.0% to 100% O ₂ , balance N ₂ O ₂ & Comb. & CH ₄ Zero Gases: From 0.1 to 10% O ₂ (2% recommended), balance N ₂ Comb. Span Gas: 800 ppm CO, 800 ppm H ₂ , 2 to 4% O ₂ , balance N ₂ (for a 0 - 2000 ppm combustibles range) CH ₄ Span Gas: 2% CH ₄ , 8% to 10% O ₂ , balance N ₂

* Calibration gas applied at 2 scfh. Response times to process gas samples vary depending on length of probe, filter selection, process pressure, and flue gas velocity.

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