AMETEK®
PROCESS INSTRUMENTS

MEASURES: O_2, Combustibles

PRODUCT DATA SHEET

WDG-HPIIC Flue Gas Oxygen and Combustibles Analyzer

Close-coupled convective design for high-particulate applications

The WDG-HPIIC is a direct-mounted combustion analyzer providing a continuous measurement of oxygen and combustibles in flue gas applications with high levels of particulate. It leverages a unique chimney-effect/convective sampling technology which offers the advantages of high-particulate sampling (typically characteristic of an insitu probe) with the high temperature and corrosion resistance of an extractive analyzer. The WDG-HPIIC 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. The analyzers can be provided with a separate Series 2000 controller and are offered in a range of mounting styles.

Reliable
The WDG-HPIIC leverages convective sampling and relies on diffusion of the sample, which reduces the velocity of gas to eliminate the problem of "sand blasting" the probe. In addition, the analyzer does not use an aspirator, minimizing particulate plugging up the inner sample plumbing.

Accurate
This analyzer utilizes the proven technology of zirconium oxide (ZrO_2) for a net oxygen measurement. In addition, the catalytic detector measures combustibles within 0-2000 parts per million (ppm) for combustion optimization.

Serviceable

Maintenance can be performed on the WDG-HPIIC without removing it from the process.

KEY BENEFITS

- Suitable for high-particulate processes
- Completely field serviceable
- Suitable for flue gases up to 1537°C (2800°F)
- Weatherproof, stainless steel enclosure
- Four (4) alarms for high/low conditions
- Available option for HART communications
- Available options for hazardous locations Class I, Div. 2 and Class I, Div. 1
- Designed for combustion optimization to maximize fuel efficiency

APPLICATIONS

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

KEY MARKETS

- Cement and lime
- Sludge incineration
- Pulp and paper

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PERFORMANCE SPECIFICATIONS

Sensor Specifications

Principle of operation	Zirconium oxide (ZrO_2) for net oxygen (O_2) measurement
Output range	Oxygen: From 0-1% to 0-100%; Combustibles: From 0-2,000 ppm to 0-10,000 ppm or from 0-1% to 0-5%
Accuracy	Oxygen: ±0.75% of measured value or ±0.05% oxygen, whichever is greater; Combustibles: ±2% of full-scale output range
Response	Oxygen: 90% of a step change <30 seconds with 24" probe
Drift	< 0.1% of cell output per month; < 0.005% O_2 per month with 2% O_2 applied
Max temp/Probe type	704°C (1300°F)/316 SS; 1024°C (1875°F)/310 SS; 1537°C (2800°F)/Ceramic
Probe lengths	0.60m, 0.91m & 1.21m (24in, 36in & 48in.)
Max sample dew point	200°C (392°F)
Sample pressure	±10 in. water gauge
Environment	Ambient temperature: -20° to 71°C (-5 to 160°F), -20 to 60°C (-5 to 140°F) with Div. 2 option. Relative humidity: 10% to 90%, non-condensing
Enclosure	Lift-off NEMA 3R, weather-resistant, stainless steel. Optional hinged NEMA 4X (IP56), explosion-proof, purged, and floor mount versions available
Power requirements	115 VAC, ±10%, 47-63 Hz, 600 VA max. (650 VA w/floor mount option); 230 VAC, ±10%, 47-63 Hz, 1850 VA max. (1900 VA w/floor mount option)
Calibration gas requirements	Use calibration gases @ 10 psig, 1.5 scfh (0.70 kg/cm^2, 0.7 L/min.); O_2 span gas: Air or from 1.0% to 100% O_2, balance nitrogen (N_2) O_2 zero gas: 2% or from 0.1% to 10% O_2, balance N_2; Comb. span gas: 60 to 80% (ppm ranges) or 40 to 60% (% ranges) of the selected comb. recorder output range in certified mixture of CO + H_2, 3-4% O_2, balance N_2

Series 2000 Control Unit Specifications

Display	Four-line x 20-character vacuum fluorescent. Displays combinations of O_2, % or ppm combustibles, time & date, cell temp., user-programmable text, thermocouple mV or cell mV. Password protection, programmable pressure compensation and context-sensitive help are also provided
Analog output	Two isolated linear current outputs for oxygen and one for combustibles. Select O_2, combustibles, cell temperature, thermocouple mV or cell mV. Each output can be 4-20 mA, 0-20 mA, 20-4 mA or 20-0 mA and is fully scalable. Hold or track during calibration and select degree of damping. Maximum load 1200 ohms
Alarms	Two independent O_2 alarms, each high or low selectable. One alarm can be assigned as O_2, calibrate or verify. Set relays to energize or de-energize on alarm
Contact rating	0.5A, 30V, 10VA max. noninductive load, AC or DC
Diagnostics	Watchdog timer and service alarms. System test for A/D, RAM, EEPROM, and keypad. Display line 4 reserved for full text error and diagnostic messages. 20-entry event log
Communications	RS485, 2-way addressable
Environment	Ambient temperature: -10 to 50°C (14 to 122°F); Relative humidity: 10 to 80%, non-condensing
Enclosure	Standard weatherproof NEMA 4 (IP 56) wall/panel mount. Optional GP (General Purpose) wall mount, GP 19in rack mount, GP panel mount, or stainless steel weatherproof NEMA 4X (IP 56) wall/panel mount. All are UL Listed for NEC Class I, Division 2 areas. Purged and explosion-proof versions also available
Calibration	O_2 cell lifetime extender. Calibrate or verify calibration. Store last calibration and verification data. Selectable calibration gas run time and process recovery time. Timed automatic calibration with optional Remote Calibration Unit
Power requirements	Nominal 115 to 230 VAC ±10%, 47 to 63 Hz, 75 VA max
System compliance	EMC Directive: 2004/108/EC; Low Voltage Directive: 73/23/EEC

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One of a family of innovative process analyzer solutions from AMETEK Process Instruments.
Specifications subject to change without notice.