

AFiM: IN SITU ZIRCONIUM OXYGEN & REDUCTORS ANALYZER FOR MEDIUM TEMPERATURE COMBUSTION CONTROL



- > Analyzer for combustion control up to 600°C and up to 50m distance
- > Key device to be integrated and added in every combustion regulation system
- > Revolutionizes the state-of-the-art in standard design for zirconia sensors used in O2 analysis
- > High throughput manufacturing
- > Streamlined integration:
 - FiNCORE sensor with built-in junction box.
 - Standard filter holder 60mm or 100mm flange made from SS316L.
 - FiNCORE controller transmitter board.
 - FiNCORE standard cabinet with OLED display + 5 buttons or small cabinet with 4-20mA displays
 - Standard 24V DC power connection
 - Modbus RTU RS-485 communication
 - 2x 4-20mA NAMUR analog outputs

ZrO2 FiNCORE OVERVIEW

The oxygen measurement enables the control of burner fuel/air ratios to ensure combustion efficiency and process safety. FiNCORE in-situ Combustion Control Analyzers can be installed in hazardous areas and can withstand critical environments such as:

- > Refinery process heaters
- > Petrochemical reactor furnaces
- > Industrial large-scale boilers
- > Metal fusion/Treatment furnaces
- > Glass industry furnaces
- > Large scale dryers (Paper, Wood...)

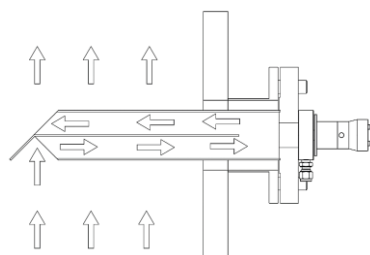
New Generation Analyzer with highest standard of accuracy and reliability

- > Multiplex long life sensor
 - O2 with air/gas reference, acc. to Nernst law
 - pRed (Reducing potential), COe unburnt compounds production indicator
- > Sensibility down to 10ppm H2 or CO
- > Robust versatile electronic board
- > Low maintenance probe design
- > Low response time
- > Built-in heater & thermocouple
- > Low heating inertia and gradient
- > Consistent repeatability
- > Superior linearity
- > High reproducibility due to serial production

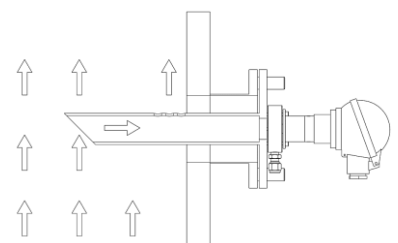
Sampling principle

- > Passive flue gas deviation
- > Low-maintenance cost & robustness
- > Low sampling response Time
- > Range of design, custom made:
 - Flue Dimension: 200mm to 5m
 - Flue gas Temp.: up to 600°C
 - Mating Flange dimension and type

Bypass Tube



Direct Tube



Analysis capabilities and configuration:

- > O2 – 0.1% to 100% for combustion regulation
- > O2 + O2 – Redundancy with two probes or in one probe design
- > O2 + COe – For combustion efficiency assessment
- > O2 / O2 – Built-in redundancy for enhanced reliability and lower maintenance/calibration

Zr | O2 FiNCORE AFiM CHARACTERISTICS:

APPLICATION	In situ O2%, COe/pRed, in Combustion Flue Gas for process control	CALIBRATION GAS	Recommended concentrations: Intercept gas: 20.9% O2 (Instr. Air) Slope gas: 1.0% O2 COe: 2%vol.O2 + 250ppmCO + 25ppmH2
MEASUREMENT PRINCIPLE	Zirconium Oxide Sensor	IN SITU SAMPLING SYSTEM	Probe mounted on made to order sampling Tube inserted into the flue gas duct. See relevant data sheet
MEASUREMENT RANGE	O2: 0.1 - 100% COe/pRed: 10 - 200 ppm H2, 5000ppm CO	OUTPUT SIGNALS	4-20mA – NAMUR – max 1000 Ω RS485 RTU/MODBUS
MEASURED GAS TEMPERATURE	Up to 600°C	WARM-UP TIME	< 10 min.
MEASURED GAS PRESSURE	-0.5 to +0.5 bar	SENSOR HEATING REGULATION	S type thermocouple
RESPONSE TIME	At sampling port: T60 < 15s At calibration port: T60 < 4s	STORAGE	Ambient temperature, <95%RH > 1 year
REPETABILITY	+/- 0.5% of full scale	ACCESSORIES	Sampling tube: Direct, By-pass, Flow booster Calibration set manual or automatic 115-230V AC Power supply Small cabinet with 4-20mA displays
LINEARITY	+/- 2% of value, not lower than 0.1%		
SENSOR TEMPERATURE	600 to 800°C - regulated		
POWER SUPPLY / CONSUMPTION	24V DC Average 7W – Up to 9W		

ORDERING INFORMATION:

Analyzer type AFiM – process temperature up to 600°C – remote transmitter

FiNCORE SENSOR	
Product Number	Product Description
ZRPO2S-B	FiNCORE sensor with build-in junction box + cable gland for O2 measurement
ZRPC2S-B	FiNCORE sensor with build-in junction box + cable gland for O2 + COe measurement

FILTER HOLDER WITH CALIBRATION PORT	
Product Number	Product Description
ZRF6-LO	Filter holder Ø 60 mm with SS316L filter and 6mm calibration port
ZRF0-LO	Filter holder Ø 100 mm with SS316L filter and 6mm calibration port

(¼" calibration port can be fitted upon request; filter can be made of INCONEL 600 upon request)

FiNCORE TRANSMITTER	
Product Number	Product Description
ZRTOS3-OFM0	FiNCORE O2 Transmitter 115/230V AC, OLED Display direct interface, 2x4-20mA, RS485, in SS304 IP Cabinet 3 settable dry contacts output, 2 settable dry contacts input
ZRTOS3-OFMA	FiNCORE O2 Transmitter 115/230V AC, OLED Display direct interface, 2x4-20mA, RS485, in SS304 IP Cabinet with automatic calibration, 1 settable dry contact output, 2 settable dry contacts input
ZRTCS3-OFM0	FiNCORE O2 + COe Transmitter 115/230V AC, OLED Display direct interface, 2x4-20mA, RS485, in SS304 IP Cabinet 3 settable dry contacts output, 2 settable dry contacts input
ZRTCS3-OFMA	FiNCORE O2 + COe Transmitter 115/230V AC, OLED Display direct interface, 2x4-20mA, RS485, in SS304 IP Cabinet with automatic calibration, 2 settable dry contacts input

CABLE	
Product Number	Product Description
ZRZB - 0	Analyzer connection cable for junction box (cable length up to 10 meters)
ZRZB - 1	Analyzer connection cable for junction box (cable length up to 50 meters)

SAMPLING TUBE	
Product Number	Product Description
STDL***FDE	Direct sampling tube, SS316L, 4"150 FF flange for probe mounting on straight extension
STBL***FDE	By-pass sampling tube, SS316L, 4"150 FF flange for probe mounting on straight extension

(***: tube length, flange type and dimensions can be adjusted upon request)

OPTION: CALIBRATION SET	
Manual or automatic calibration set for O2 or O2+COe analyzer upon demand	