

AFiL: IN SITU ZIRCONIUM OXYGEN & REDUCTORS ANALYZER FOR LOW TEMPERATURE COMBUSTION CONTROL



- > Analyzer for combustion control up to 300°C and up to 50m distance with junction box
- > 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 DIN connector.
 - 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...)

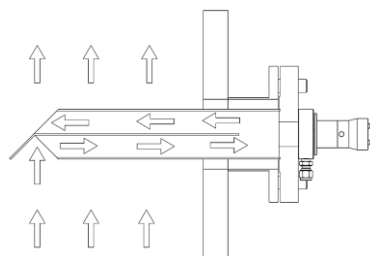
New Generation Analyzer with highest standard of accuracy and reliability

- > 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

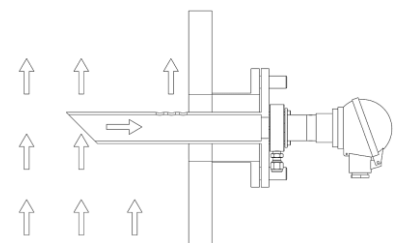
Sampling principle

- > 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 300°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 AFiL CHARACTERISTICS:

APPLICATION	In situ O ₂ %, CO _e /pRed, in Combustion Flue Gas for process control
MEASUREMENT PRINCIPLE	Zirconium Oxide Sensor
MEASUREMENT RANGE	O ₂ : 0.1 - 100% CO _e /pRed: 10 - 200 ppm H ₂ , 5000ppm CO
MEASURED GAS TEMPERATURE	Up to 300°C
MEASURED GAS PRESSURE	-0.5 to +0.5 bar
RESPONSE TIME	At sampling port: T ₆₀ < 15s At calibration port: T ₆₀ < 4s
REPETABILITY	+/- 0.5% of full scale
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

CALIBRATION GAS	Recommended concentrations: Intercept gas: 20.9% O ₂ (Instr. Air) Slope gas: 1.0% O ₂ CO _e : 2%vol.O ₂ + 250ppmCO + 25ppmH ₂
IN SITU SAMPLING SYSTEM	Probe mounted on made to order sampling Tube inserted into the flue gas duct. See relevant data sheet
OUTPUT SIGNALS	4-20mA – NAMUR – max 1000 Ω RS485 RTU/MODBUS
WARM-UP TIME	< 10 min.
SENSOR HEATING REGULATION	S type thermocouple
STORAGE	Ambient temperature, <95%RH > 1 year
ACCESSORIES	Sampling tube: Direct, By-pass, Flow booster Calibration set manual or automatic 115-230V AC Power supply Small cabinet with 4-20mA displays

ORDERING INFORMATION:

Analyzer type AFiL – process temperature up to 300°C – remote transmitter

FiNCORE SENSOR	
Product Number	Product Description
ZRPO2S-D	FiNCORE sensor with build-in DIN connector for O ₂ measurement
ZRPC2S-D	FiNCORE sensor with build-in DIN connector for O ₂ + CO _e measurement

(Junction box to be used in case of remote by more than 10 meters)

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)

FiNCORE TRANSMITTER	
Product Number	Product Description
ZRTOS3-OFM0	FiNCORE O ₂ 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 O ₂ 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 O ₂ + CO _e 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 O ₂ + CO _e 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***FDY	Direct sampling tube, SS316L, 4"150 FF flange
STBL***FDY	By-pass sampling tube, SS316L, 4"150 FF flange

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

OPTION: CALIBRATION SET	
Manual or automatic calibration set for O ₂ or O ₂ + CO _e analyzer upon demand	