

SYRE



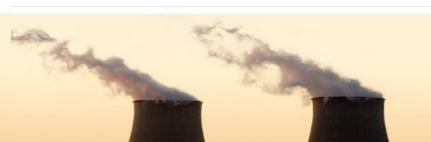
SYRE

OXYS



OXYS

The FER Strumenti Oxygen Analyzers described here, allow the measurement of the residual oxygen content after combustion in a safe, simple and reliable way, in the ideal point where it must be carried out. The simplicity of the equipment allows very competitive prices without losing quality of the components used. Leading world brands have been systematically adopting this tool for years with complete satisfaction.



Combustion regulation

The measurement of the oxygen content in the combustion products is probably the best method to be able to regulate the air/fuel ratio in an optimal way and obtain the highest efficiency. To obtain a regulation that allows you to effectively keep the process under control and realize the well-known savings in terms of fuel and long life of the heat exchangers, the analyzer must have performances that ensure that:

- low response time
- provide the measurement of the actual oxygen content of the process to be performed where any re-entry of air can distort the value
- perform the analysis in the natural conditions of the gas, without subsequent heating. The temperature increase inside a probe with heater could favor the combination of unburnt products with the oxygen still present in the process, generating a value distorted
- be insensitive to aggressive atmospheres, being able to function correctly with any type of fuel and component present in the process
- require very low maintenance needs that minimizes the time of unavailability of the measure
- be absolutely sure
- be simple to manage
- have the lowest cost of purchase, installation and management

FER Strumenti solutions

FER Strumenti zirconia oxygen analyzer for high temperature (i.e. without heater) that has been on the market for about twenty years and continuously improved, has been designed to meet all the points indicated above. It is made up of:

- a **probe** with cell made of zirconium oxide totally stabilized yttrio. The probe is made entirely of ceramic (99.97% alumina) and can work up to a maximum temperature of 1600° C; a platinum thermocouple, type B, which does not require compensated cables, mounted inside it, continuously measures the temperature, that must be in the range 500°C - 1600°C; it is mounted in the high radiant, this mounting ensures a very rapid response time and performs the analysis in the chamber where the combustion takes place, at the process temperature; the probe, which is not equipped with a heater and therefore has no power supply, is perfectly safe; being connected to the electronic unit by means of a pair of active barriers, it is intrinsically safe according to the Cenelec EN 50020 standard; the continuous and accurate compensation made using the thermocouple eliminates any drift, which has been shown to be within 0.1% of O₂ in twelve months; therefore there is no need of calibration; the ceramic probe can be used in the most aggressive atmospheres without risk of corrosion; uses in the incinerator of sulfur recovery plants have shown a duration of several years without any maintenance.
- an **electronic converter** connected to a pair of active barriers; both the converter and the barriers are housed in an explosion-proof enclosure; the case has a glass lid through which the display can be read; the controls can be operated from the outside without opening the case through magnetic switches.
- a **pneumatic kit** that doses the reference air, and the gas from the cylinder to check the correct functioning of the analyzer
- **normal copper cable**, shielded, for the electrical connection between the probe and the electronic unit; since the cable is also intrinsically safe, a non-armored cable can be used



Applicazioni

These analyzers can be used for the analysis of oxygen in the combustion chamber with $T > 500^{\circ}\text{C}$ in the most varied industrial and civil applications such as:

- tail gas incinerator of sulfur recovery unit
- sulfuric acid regeneration unit
- incinerators unit
- furnaces
- heaters

Options

For these analyzer models there are some options indispensable in particularly hostile environments:

- specific probes protection tubes for particular process conditions
- 4..20 mA signal overvoltage transmitter protection device for classified area
- pole with sun shade to protect from direct sunlight
- heated box for classified area suitable for ambient $T < -20^{\circ}\text{C}$

Pole with sun shade to protect from direct sunlight



Heated box for classified area for ambient temperatures $< -20^{\circ}\text{C}$



SYRE Technical specifications.

- Measuring field: 0,0001 - 25% in O₂ in volume
- Precision: $\pm 0.5\%$ of the theoretical value or 0.05% O₂ (whichever is the greater)
- Stability: within 1%
- Response time (90%): zirconia cell < 1", the whole system < 15"
- Storage temperature: -40°C/+80°C
- Working temperature: probe 600° - 1600° C for the temperature of the process;
< 150° C for the head of the probe. Transmitter: -25° ÷ +65° C
- Analog output: passive 4-20 mA conform to Namur NE 43 recommendation. Settable O₂ range
- In case of fault the analogical outputs are forced to 3.75 mA
- Interfaces: point-to-point HART protocol rev.7.0
- Dumper: time constant adjustable between 0 and 900 sec.
- Power supply (on 4-20 signal cables): 24 Vdc max 900ohm.
- EMC: according to EN61000-6-1:2007, EN61000-6-2:2019, EN61000-6-3:2007, EN61000-6-4:2007
- Compliance with the Atex directive relating to equipment: II 2G IIC T4 Gb, II 2D IIIC T135°C Db
- EAC Certificate in compliance with Technical Regulation of Custom Union TR CU 012/2011 " On safety of equipment intended for use in explosive atmospheres"; TR-CU-004 and TR-CU-020
- Pattern Approval Certificate (PAC) for Russian custom union
- EU – Vietnam free trade deal Rex ITREXIT12277660150, CE approved.
- Transmitter enclosure certification: Ex d II C T4 -T6, Ex tDA21 IP66 T85°C T135°C
- Relative humidity < 90% non condensating
- Probe Dimension: immersion length: 650, 500, 310 mm; diameter: 28 mm; with extension tubes 1500mm of immersion length can be reached; Transmitter: 138 h.93 mm.; flow-meters box: 230x300, H= 170 mm.
- Instrumentation air pressure: 2-12 bar
- Fittings for tubing: mm. 6x4 or 1/4" NPT-F
- Inlets for electrical connections: M20 x 1.5



OXYS Technical specifications

- Measuring range: 0,0001 - 25% O2 in volume
- Precision: $\pm 0.5\%$ of the theoretical value or 0.05% O2 (whichever is the greater) .
- Stability: within 1%
- Response time (90%): zirconia cell < 1", the whole system < 15"
- Storage temperature: probe $-40^{\circ}\text{C}/+80^{\circ}\text{C}$
- Working temperature: probe $500^{\circ} \div 1600^{\circ}\text{C}$ for the temperature of the process room temp. < 150°C for the head of the probe; converter and barrier: $-20^{\circ} \div +55^{\circ}\text{C}$
- Analog output: $4 \div 20\text{ mA}$ 500 ohm or $0 \div 10\text{ V}$ 10 mA linear on one of the following ranges: $0 \div 1999\text{ ppm}$; $0 \div 5\%$; $0 \div 10\%$; $0 \div 25\%$
- Interfaces: RTU Mod-bus protocols on RS485, HART protocol optional
- Alarms: (potential free contacts) high and low O2, fault (fail safe) service and calibration in progress. For all contacts 24 V, 1 A max
- In case of fault the analogical outputs are forced to 2 mA or 0 V
- Dumper: time constant adjustable between 0 and 900 sec
- Power supply: 115V and 230 V $\pm 10\%$, 50/60 Hz 50 VA max
- EMC: according to EN61000-6-1:2007, EN61000-6-2:2019, EN61000-6-3:2007, EN61000-6-4:2007
- Protection: "c" IIC T4 – IP 65, IP66 for flowmeter box.
- Conformity certificate according to ATEX and CEI EN60017-11:2012
- Cable connecting probe to electronic unit: 4x1.5 shielded. Max length mt 100
- Relative humidity < 90% non condensating
- Probe dimensions: immersion length: 650, 500, 310 mm; diameter: 28 mm; with extension tubes 1500mm can be reached.
- Transmitter dimensions: mm. 305x330, H= 200
- Flow-meters box dimensions: mm. 230x300, H = 170
- Instrumentation air pressure: 2-12 bar
- Compression fittings for tubing: mm. 6x4 or 1/4" NPT-F
- EU – Vietnam free trade deal Rex ITREXIT12277660150

