ELTRA®
ELEMENTAL ANALYZERS

OXYGEN / NITROGEN ANALYZER

ELEMENTRAC ON-p 2

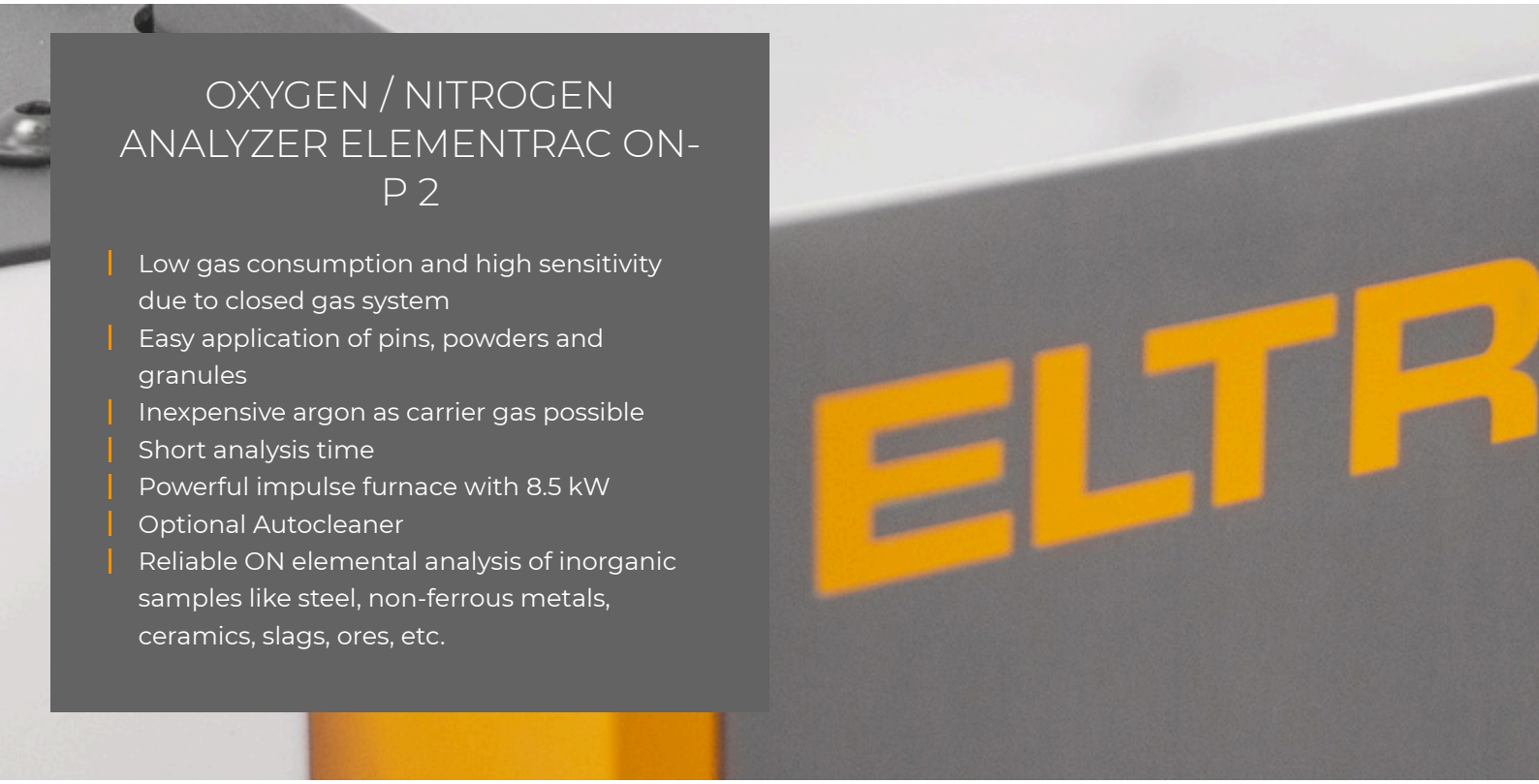
The new ELEMENTRAC ON-p 2 is a powerful and robust elemental analyzer for measurement of oxygen and nitrogen concentrations in inorganic materials like steel, iron, copper or ceramics. The highly sensitive NDIR and thermal conductivity detectors reliably detect element concentrations from low ppm content to high percentages.

The innovative sample port system with pulsed chamber rinsing and vertical sample drop allow for user-friendly and comfortable analysis of rod-shaped, granular or powdery samples with a weight of up to 2 grams.

The ELEMENTRAC ON-p 2 elemental analyzer meets or exceeds the requirements of all relevant international standards such as ASTM E 1019 or DIN EN 3976.

Click to view video

Product Video



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- Low gas consumption and high sensitivity due to closed gas system
- Easy application of pins, powders and granules
- Inexpensive argon as carrier gas possible
- Short analysis time
- Powerful impulse furnace with 8.5 kW
- Optional Autocleaner
- Reliable ON elemental analysis of inorganic samples like steel, non-ferrous metals, ceramics, slags, ores, etc.

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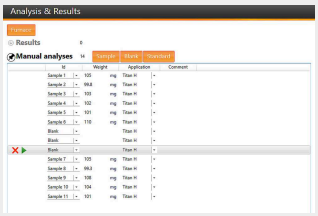
OPERATION AND ANALYSIS PROCESS



Step 1: Logging the sample into the ELEMENTS software

The sample ID is logged into the software and the weight is automatically transferred (see step 2).

Step 2: Weighing and introduction of sample into the port

The ELEMENTRAC ON-p 2 analyzes volumes from a few mg up to 2 grams safely and precisely. Rod-shaped or granular samples can be applied directly. For the elemental analysis of powders, a capsule is recommended which does not have to be sealed.

Step 3: Analysis

The empty graphite crucible is then placed on the lower electrode and the elemental analysis is started via the ELEMENTS software. The software controls all subsequent process steps.

Step 4: Data output and export

120 to 180 seconds after the analysis has started, the measured concentrations are available for export as a report or via LIMS.

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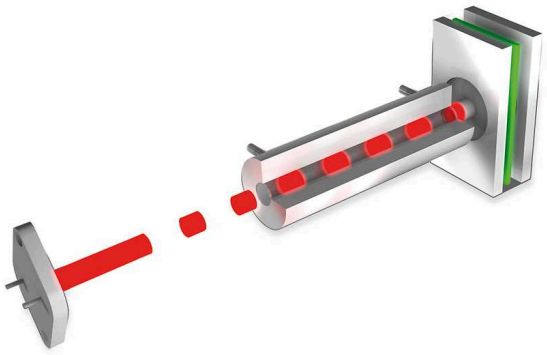
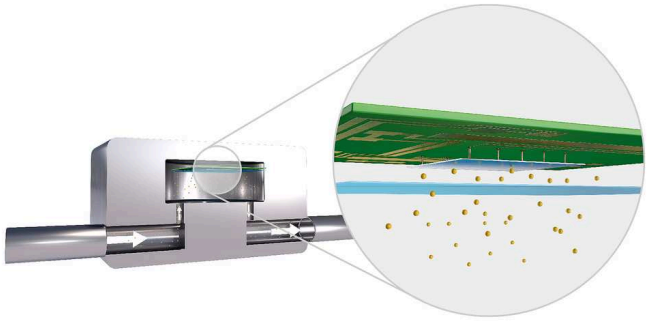
CONFIGURATIONS

The ELEMENTRAC ON-p 2 elemental analyzer is available as a single-element analyzer for oxygen or nitrogen only, or in a multi-element configuration for measuring ON. Whereas oxygen is determined as CO_2 in up to two infrared cells, nitrogen is detected in its elemental form in a thermal conductivity cell.

CUVETTE WITH VARIABLE LENGTH



THERMAL CONDUCTIVITY CELL WITH HIGH SENSITIVITY



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INTEGRATED STANDARD SOLUTIONS

The chemicals and filters required for operation of the elemental analyzer are arranged conveniently on the front panel and can be concealed behind a removable door during routine operation. This arrangement significantly reduces the time required for maintenance and increases user-friendliness. In addition, innovative details considerably improve the reproducibility of measurements.

Innovative sample port & pulsed chamber flushing

The new sample port of the ON-p 2 elemental analyzer ensures comfortable operation and reproducible measured values. Differently shaped materials like solid pieces, granules or powder in capsules can be applied up to a weight of 2000 mg, and are quickly freed from the surrounding atmosphere with the help of pulsed carrier gas flushing in the sample port. Then they drop vertically into the preheated graphite crucible for analysis.

- Robust against dust development
- No closing of capsules required
- Direct application of up to 2000 mg granulate
- Low in maintenance and wear

Powerful catalyst

During elemental analysis in the graphite crucible, carbon monoxide (CO) is produced which is converted to carbon dioxide (CO_2) in the catalyst and subsequently detected in the IR cells. The easy-to-maintain catalyst with copper oxide filling ensures complete oxidation and thus, reliable oxygen analysis even of difficult materials such as oxides.

Closed gas management

The ELEMENTRAC ONH elemental analyzer series uses a closed gas system in overpressure. This ensures that always 100% of the released sample gas is fed to the detectors which guarantees low detection limits and good reproducibility.

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OPTIONS

In addition to the integrated solutions of the ELEMENTRAC ON-p 2, further options are available to increase efficiency and extend the application range of your elemental analysis.

Autocleaner

By melting the sample in a graphite crucible at temperatures of up to 3000 °C deposits are generated at the upper electrode and in the furnace chamber which may affect the reproducibility of ONH measurements in a negative way.

The new optional Autocleaner reliably removes these deposits, enabling precise elemental analysis even for high throughputs. Additionally, an efficient gas calibration and cleaning furnace for thorough carrier gas pre-cleaning are available for the elemental analyzer.

ELEMENTS SOFTWARE

The comprehensive Windows-based ELEMENTS software is an essential part of all ELEMENTRAC generation elemental analyzers.

A central window (analysis and results) is the starting point from which all functionalities required for the daily routine are easily accessible. From here it is possible to group and export analyzed samples, or register and analyze new ones. The user may call up various subordinate functionalities like application settings, calibration, diagnosis, or status.

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TYPICAL SAMPLE MATERIALS

alloys, aluminum, ashes, carbides, cast iron, ceramics, copper, ferroalloys, iron, metals, ores, refractory metals, silicon, steel, ...

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TECHNICAL DATA

Measured elements	nitrogen, oxygen
Samples	inorganic
Furnace alignment	vertical
Sample carrier	graphite crucibles
Field of application	ceramics, engineering / electronics, steel / metallurgy
Furnace	electrode impulse furnace (max. 8,5 KW*), temperatures in excess of 3,000 °C
Detection method	solid state infrared absorption for oxygen thermal conductivity for nitrogen
Typical analysis time	120 - 180 s
Chemicals required	copper oxide, magnesium perchlorate, sodium hydroxide
Gas required	compressed air, helium 99.995 % pure, argon 99.995% pure (if required), all gases with (2 - 4 bar / 30 - 60 psi)
Power requirements	3~ 400 V, 50/60 Hz, max. 8,500 W
Dimensions (W x H x D)	57 x 77 x 63 cm
Weight	~ 161 kg
Required equipment	PC, monitor, balance (resolution 0.0001g)
Optional accessories	carrier gas purification, external chiller, gas calibration unit
-	* limited to 6.8 kw in application settings

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FUNCTIONAL PRINCIPLE

The measuring principle of the ELEMENTRAC ON-p 2 elemental analyzer allows for a wide measuring range. To analyze the sample, it is weighed and placed on the sample port. Flushing with carrier gas prevents atmospheric gas (oxygen and nitrogen) from getting into the furnace.

The graphite crucible is outgassed in the impulse furnace of the analyzer to reduce possible contaminations (e.g. residual hydrogen). After a stabilization phase the sample is dropped into the crucible and melts. Carbon monoxide is produced by the reaction of carbon in the graphite crucible and oxygen of the material. Nitrogen and hydrogen are released in its elemental form. The carrier gas (helium) and sample gasses pass through a filter before entering a copper oxide catalyst which converts the CO to CO_2.

The CO_2 is then measured by infrared cells to determine the oxygen content. CO_2 and water are removed chemically and the nitrogen content is measured in the thermal conductivity cell. As an option the less expensive Argon can be used in the elemental analyzer to determinate the oxygen and nitrogen content.

www.eltra.com/onp2