NC TECHNOLOGIES

Innovative Elemental µ-Analysis

ECS 4010 | ELEMENTAL COMBUSTION SYSTEM

CHNS-O Analyzer

ECS 4010 - CHNS-O Analyzer
Elemental Combustion System

The elemental analyzer ECS 4010 is an instrument for organic elemental analysis based on the Dumas method for the simultaneous determination of CHNS-O elements.

It represents an evolution of the elemental analysis techniques based on "flash combustion" / chromatographic separation. CO2, H2O, SO2 and N2 are separated in a GC column kept at a constant temperature that the user can select between 30 and 110 °C.

The ECS 4010 is a fully automated, microprocessor controlled analytical unit interfaced with a computer. The results can be viewed directly via PC using dedicated software. The ECS 4010 is suggested when big amount of sample is burnt (for example in soil, sediment analysis).

The ECS 4010 is also suggested in laboratories where a lot of samples are analysed. This model is suggested for N; N,C; N,C,H; N,C,H,S analysis. Thanks to the double furnace configuration a better optimization of catalyst consumption is possible.

The ECS 4010 has three main modules: a sampling/combustion system (three different autosamplers are available and various types of reactors to ensure an always optimized application), the detection system and the datahandling system.

This is a high sensitivity analysis instrument, very flexible and suitable for applications ranging from the pharmaceutical industry to marine biology, from the food analysis to petrochemical analysis.

The Detector (TCD, thermal Conductivity Detector, featuring an exclusive design) is self-calibrating and does not require the use of a reference gas.

The ECS 4010 combines robustness, reliability and flexibility in order to meet the most different analytical requirements.

The ECS 4010 is particularly suitable for linking to other units for determination of the isotopic ratios of stable isotopes in elements.

Features and Benefits

- ✓ **Fully automated** analysis system
- ✓ High **sensitivity, accuracy** and **precision**
- ✓ Application **flexibility** and **versatility**
- ✓ **Ease** of use detector **does not require reference gas**
- ✓ **Powerful software** for viewing results from a computer
- ✓ **No background nitrogen**
- ✓ **Three types of autosamplers available** (electronic, pneumatic and manual)
- ✓ **Easy connection** to Mass Spectrometers and other detectors for stable isotype analysis
- ✓ **Low** operation and management **costs**

Technical Specifications - Ecs 4010

Analyzer detector range for C, H, N, S & O	200 ppm - 100 %
Sample size	0.01 mg - 100 mg (according to sample nature)
Accuracy (%)	< 0.2 (reference material)
Precision (%)	< 0.1 (reference material)
Combustion viewing facility	Standard top viewing
Detector	TCD LOQ: 1-5 µg
Reactor oxidation	800-1100 °C
Reactor reduction	600-1100 °C
Autosampler	PNEUMATIC: up to 3 stackable carousels for a total of 147 sample. ELECTRONIC: carousels 32, 50, 100 positions
Analysis time	15 minutes for CHNS, 3 minutes for CN with 2 m GC column (reference material)
Calibrations	Linear, quadratic, cubic
Active calibrations	As necessary
Software	Dedicated, EAS CLARITY
PC OS	Windows
Gas utilities	Compressed air (dry and oil free), Helium (He), Oxygen (O_2)
O_2	99.999% (5.0) purity, 3-5 bar
HE	99.999% (5.0) purity, 3-5 bar
Size	760 x 350 x 700 mm (W x D x H)
Power	230 VAC ± 10%, 1-10 A
Consumables	Proprietary NC Technologies S.r.l.
Analysis cost	0.60 - 0.80 € - depending on sample size

Application Fields

This line of elemental analyzers is flexible and powerful thus serving a wide range of applications for research and quality control.

ORGANIC/INORGANIC CHEMISTRY AND PHARMACEUTICALS

- ✓ Fine chemicals
- ✓ Pharmaceuticals products
- ✓ Organo-metallic compounds
- ✓ Polymers
- ✓ Plastic
- ✓ Synthetic rubbers
- ✓ Fluorine-compounds
- ✓ Explosives
- ✓ Catalysts
- ✓ Textiles
- ✓ Pesticides
- ✓ Detergents
- ✓ Fibers

MATERIAL CHARACTERIZATION

- ✓ Glue/resins
- ✓ Papers
- ✓ Rubbers
- ✓ Cement
- ✓ Ceramics
- ✓ Carbon/glass fibers
- ✓ Tires
- ✓ Pigments & dyes
- ✓ Refractory materials
- ✓ Building materials
- ✓ Inorganic materials
- ✓ Textile fibers
- ✓ Wood powders
- ✓ Metals

ENVIROMENTAL ANALYSIS

- ✓ Soils, sediments and rocks
- ✓ Composts
- ✓ Wastes
- ✓ Sewage/sludge
- ✓ Pesticides
- ✓ Water solution
- ✓ Woods
- ✓ Particulates in water by filters
- ✓ Waste water
- ✓ Particulates in air by filters

ECS 40 SERIES

AGRONOMY AND MARINE SCIENCE

- ✓ Soil
- ✓ Plants (leaves, roots, fruit)
- ✓ Sediments
- ✓ Humus
- ✓ Algae
- ✓ Plankton
- ✓ Particulate matter in water by filters
- ✓ Water
- ✓ Fertilizer

PETROCHEMISTRY AND ENERGY

- ✓ Coals
- ✓ Cokes
- ✓ Crude oils
- ✓ Gasoline/diesel
- ✓ Alternative fuels
- ✓ Petroleum derivates
- ✓ Lubricants
- ✓ Oil additives
- ✓ Graphite

HUMAN AND ANIMAL SAMPLES

- ✓ Blood
- ✓ Hairs
- ✓ Nails
- ✓ Serum
- ✓ Urine
- ✓ Faeces

ISOTYPE ANALYSIS

- ✓ Soil and plant research
- ✓ Forensic
- ✓ Bio oceanography
- ✓ Food and goods control

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