

CS - 3035G

Dual Combustion Furnace Infrared
Carbon & Sulphur Analyzer



EPCC / PRODUCTS / APPLICATION / SOFTWARE / ACCESSORIES / CONSUMABLES / SERVICES

Analytical Technologies Limited

An ISO 9001 Certified Company

www.analyticalgroup.net

Introduction :

CS - 3035G Dual Combustion Furnace Infrared Carbon and Sulfur Analyzer, is a high-end combined infrared carbon and sulfur analyzer.

Due to the diversity of specimens of users and analytical methods, the instrument is equipped with two sets of sample pretreatment units, i.e. high frequency induction furnace and tubular resistance furnace. The resistance furnace and the high frequency induction furnace share the same infrared detection system for the detection of content of output gases to be detected. It is easy to switch between the two furnaces.

CS-3035G Dual Combustion Furnace Infrared Carbon and Sulfur Analyzer can be used for the detection of carbon and sulfur in a wide range of specimens, such as steel, cast iron, alloy, metal ore, ceramics, Tyre, cement, lime, rubber, coal, coke, refractory, carbide, graphite, oil, catalyst, soil and other solid materials.

Features:

- Produced solid-state infrared detector components
- Flexible control of the heating power
- Support for full manual mode
- Advanced infrared thermostatic technology
- Advanced flow control technology
- Unique computer software
- First-class linear treatment effect
- High testing precision
- Highly reliable circuit components; rich self-diagnostic functions
- Multiple circuit protections against meltdown
- Full close-down gas channel with zero death volume

Formation of the Instrument:

Structure of the Instrument :

Modular structure composed of the electronic scale, computer, printer, high-frequency induction combustion host, tubular resistance furnace host, vacuum cleaner and other modules.

Infrared Detection System:

- 1) Upon the needs of users, the carbon and sulfur analyzer with standard configuration is equipped with three separate infrared absorption cells (i.e. three physical channels: two carbon channels and one sulfur channel); according to the requirements of users, CS3035G series of instruments can also be equipped with four independent infrared absorption cells (i.e. four physical channels: two carbon channels and two sulfur channels).
- 2) Detector: The pyroelectric solid-state infrared detector produced in Germany is applied.
- 3) Dynamo: The synchronous dynamo produced in Switzerland is applied.
- 4) Light Source: The stable anti-oxidation infrared light source produced in the US is applied.
- 5) Constant Temperature: The entire chamber is thermostatically controlled to ensure constant analysis temperature for the accuracy of detection.
- 6) Shielding Gas: Oxygen is used for the protection and purification of infrared light source and the detector by isolating them from the ambient atmosphere to improve the stability of analysis and the accuracy of detection.

Flow control:

High-precision electronic flow control technology with the Anti-Overshoot System is adopted for flow control of analysis gas.

Catalytic Oxidation in the Copper Furnace:

- 1) Before channeled to Carbon detection cell, the analysis gas goes through catalytic oxidation in the copper furnace to turn CO in the analysis gas to CO₂ to ensure all CO and CO₂ generated in the combustion process can be detected.
- 2) Change the analyzed SO₂ into SO₃ and then absorb SO₃ to avoid air pollution

Dust Filtration

A special dust filter made of powder metallurgy materials is applied; during each analysis, the dust filter is automatically cleaned twice.

Self-checking Function of the Instrument:

- 1) Automatic monitoring and alarm of the overall oxygen pressure at the entrance furnace, the analysis pressure at the rear of the furnace and the dynamic pressure.
- 2) Automatic monitoring and alarm at the time when the high-frequency furnace is switched on or off.
- 3) Automatic monitoring and alarm for the resetting of the cleaning device with in the high-frequency furnace.

The software provides step-by-step self-checking function(the monitoring and adjustment of infrared signals, the examination of the movement of valves on gas channels).

- 5) The instrument can be checked part by part with the assistance of the software.

Weighting:

The electronic balance is connected to the computer for the accurate weighting of specimens. The weight data is automatically sent to the analysis software and if necessary, the weight of the sample can be entered manually as well.

Time for Analysis:

The typical analysis time for high frequency induction furnace is 30-40 seconds. The typical analysis time for tubular resistance furnace is 150-300 seconds.

Crucible:

The high frequency induction furnace uses the ceramic crucible with a diameter of 25mm, height of 27mm.

The tubular resistance furnace uses the porcelain combustion boat with a length of 87mm, width of 12mm and height of 10mm

Combustion Furnace:

High frequency induction furnace: 18MHz, Max 2.7KVA.

Tubular resistance furnace : a highest temperature of 1550°C; Max 20A

The resistance furnace uses carborundum heating elements for heating. By controlling the power of heating, the life of the elements can be extended. It takes about 20 minutes for the case temperature of the furnace (which is automatically controlled) to reach the operating temperature.

Pre-treatment of the Crucible :

The ceramic crucible used by the high frequency induction furnace can be pre-treated in the tubular resistance furnace. The double use of the tubular resistance furnace improves the work efficiency and the reliability of analysis.

Principle :

Depending on the requirements of specimen detection, the resistance furnace or an induction furnace will be chosen as the specimen's treatment unit. After purification, the carrier gas (oxygen) is imported into the combustion furnace and the specimen in the high-temperature combustion furnace will be oxidized by the oxygen to CO₂, CO and SO₂. After de-dusting and dehydration, the generated oxidation products are first loaded into the sulfur detection cell by the oxygen for the determination of sulfur content. Then the oxygen together with gas mixture comes into the heated catalytic furnace, in which catalytic oxidation happens and turns CO into CO₂ and SO₂ into SO₃. After sulfur removal, the gas mixture is channeled to high - carbon detection cell and low - carbon detection cell in sequence by the oxygen for the determination of carbon content. The residual gas is finally discharged out. The analytical results of carbon and sulfur content will be displayed on the analysis software of the computer in the form of % C and % S, and automatically stored for later retrieval. The analysis software may generate, upon need, analysis reports which can be printed via an external printer. CS3035 G Dual Combustion Furnace Infrared Carbon and Sulfur Analyzer which is able to detect the content of carbon and sulfur in various materials fast and accurately, is easy to operate and convenient for maintenance.

Software Functions:

- 1) Detection of the movement of solenoid valves on gas channels
- 2) Detection and adjustment of infrared signals
- 3) Fast display of analytical results and analytic curves
- 4) Automatic store of analytical results
- 5) Drawing and store of dynamic release curves
- 6) Specimen weight value entry : The software can automatically read weight values of specimens
- 7) Channel Switch: automatic switch among high-carbon channel, low-carbon channel and sulfur channel.

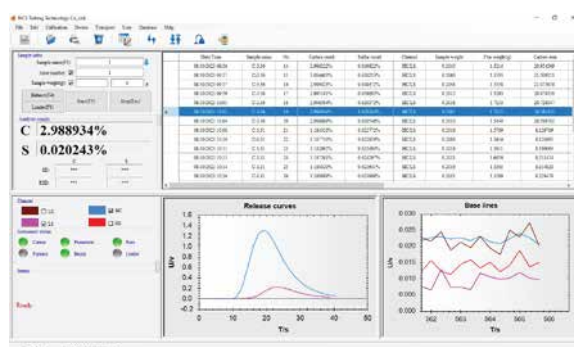
Data Processing:

- 1) Data stored can be referred in multiple ways, such as by date or specimen ID
- 2) Screening of data
- 3) The statistic treatment of data (mean, standard deviation, relative deviation)
- 4) Signal comparison to the release curves of the analytical results

Typical Data (tube furnace):

Name of the Specimen and Content of Carbon and Sulfur: C61.46; S4.34		
Specimen ID	Carbon Mass Fraction	Sulfur Mass Fraction
1	61.486	4.410
2	61.286	4.385
3	61.506	4.435
4	61.518	4.293
5	61.471	4.354

Software Interface :



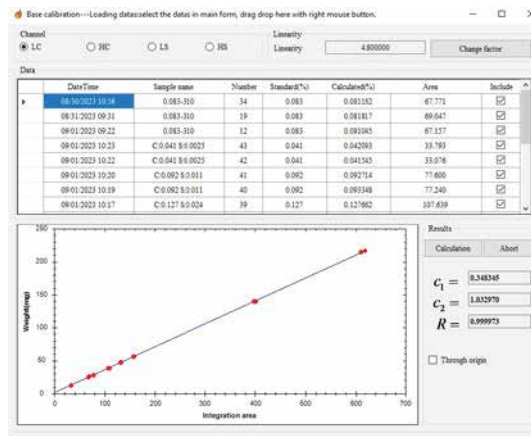
Main analysis window

Method setting

Method Name:

Config / Channel

Base deviation(mv): <input type="text" value="30"/>	Base stable(s): <input type="text" value="12"/>
C switch(v): <input type="text" value="6.60"/>	S switch(v): <input type="text" value="9.90"/>
Blank value_C(%): <input type="text" value="0.000000"/>	Blank value_S(%): <input type="text" value="0.000000"/>
Purge time(s): <input type="text" value="3"/>	Savoggas delay(s): <input type="text" value="3"/>
Lance time(s): <input type="text" value="1"/>	Heating time: <input type="text" value="20"/>
Carbon Decimal place: <input type="text" value="6"/>	Chamber time(s): <input type="text" value="1"/>
Sulfur Decimal place: <input type="text" value="6"/>	Clean interval: <input type="text" value="0"/>
Sample type: <input type="text" value="Particle"/>	Result unit: <input type="text" value="N"/>
Auto savoggas: <input checked="" type="checkbox"/>	Auto loader: <input type="checkbox"/>
Resistance furnace: <input type="checkbox"/>	Auto send: <input type="checkbox"/>



Method window

HPLC Servicing, Validation, Trainings and Preventive Maintenance :

HPLC Servicing :HPLC Servicing : We have team of service engineers who can attend to any make of HPLC promptly @the most affordable cost.

Trainings :We also take up preventive Maintenance to reduce downtime of HPLC's Trainings.

AMC's/CMC :AMC's/CMC :We offer user training both in-House and at customer sites on HPLC principles, operations, trouble-shooting.

Validations :Validations :We have protocols for carrying out periodic Validations as per GLP/GMP/USFDA norms.

Instruments :Instruments :We offer instruments/Renting Services Modules like pumps,detector etc. on Rent.



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Analytical Technologies is synonymous for offering technologies for doing analysis and is the Fastest Growing Global Brand having presence in at least 96 countries across the global. Analytical Technologies Limited is an ISO:9001 Certified Company engaged in Designing, Manufaturing, Marketing & providing Services for the Analytical, Chromatography, Spectroscopy, Bio Technology, Bio Medical, Clinical Diagnostics, Material Science & General Laboratory Instrumentation. Analytical Technologies, India has across the Country operations with at least 4 Regional Offices, 6 Branch Offices & Service Centers. Distributors & Channel partners worldwide.

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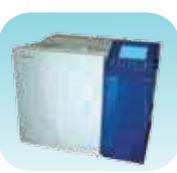
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Chromatograph
2979 Plus



Flash
Chromatograph



Atomic Absorption
Spectrophotometer



Liquid Partical
Counter



Optical Emission
Spectrophotometer



DSC/TGA



Semi Auto Bio
Chemistry Analyzer



HEMA 2062
Hematology
Analyzer



Micro Plate
Reader/Washer



URINOVA 2800
Urine Analyzer



Total Organic
Carbon 3800



Fully Automated
CLIA



NOVA-2100
Chemistry Analyzer



PCR/Gradient PCR/
RTPCR



TOC
Analyzer



Laser Particle
Size Analyzer



Ion Chromatograph



Water purification
system

Regulatory compliances



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Analytical
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1. Research & Innovation Scientist's awards/QC Professional Award : Quality life is possible by innovation only and the innovation is possible by research only, hence ANALYTICAL FOUNDATION is committed to identify such personalities for their contributions across various field of Science and Technology and awarding them yearly. To participate for award, send us your details of research / testing / publication at Info@analyticalfoundation.org

2. Improving quality of life by offering YOGA Training courses, Work shops/Seminars etc.

3. ANALYTICAL FOUNDATION aims to DETOXYFY human minds,souls and body by means of yoga, Meditation, Ayurveda, Health Care, Awards, Media, Events, Camps etc.

Reach us @



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