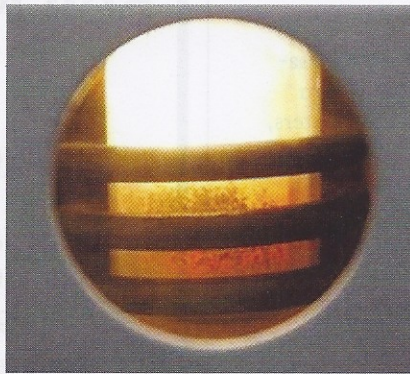


Bruker's Carbon and Sulfur Analyzer Now Features Auto Cleaning

Bruker AXS, Billerica, Mass., has added an auto cleaning feature to its G4 ICARUS CS HF carbon and sulfur analyzer, which is used by metalcasting facilities to assess and control the carbon and sulfur content in metal.

Over time and after many sample analyses, byproducts such as metal oxide dust accumulate in the combustion furnace area of the analyzer, resulting in erratic results or even component failure. Prior to this upgrade, cleaning the instrument required disassembly and cumbersome manual cleaning that ate up lab time.

While other self-cleaning analyzers require abrasive cleaning of the quartz tube by brushes and a vacuum cleaner, Bruker designed a pneumatically assisted cleaning assembly to scrub and dispose of the interfering combustion properties automatically in the G4 ICARUS. A pneumatically-driven piston with integrated components cleans the furnace area, including a metal dust filter and the extraction nozzle with a downward stroke after each analysis.



A combustion viewing port on the front of the analyzer allows users to monitor the process in real-time.

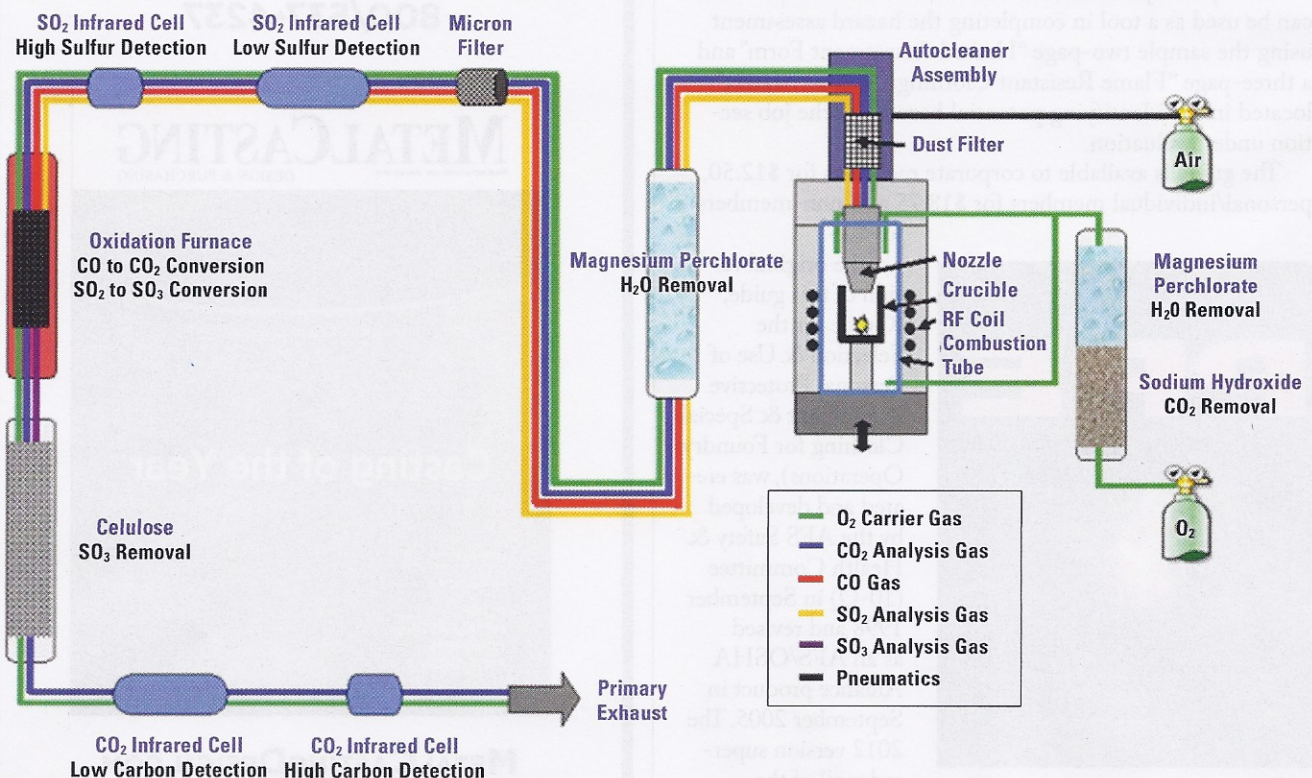
Dust is wiped from the metallic filter, and various blades on the cleaning mechanism's plunger remove splattering particles from the inner rim of the extraction nozzle. A small pulse of oxygen flow transports the liberated particulates into the spent crucible, to be disposed along with the combusted sample material.

According to Bruker, this new auto cleaning feature allows the user to perform hundreds of analyses, depending on the application, before disassembly

and manual cleaning is required.

Using a high frequency induction furnace, the G4 ICARUS converts solid samples into gaseous components, which are measured by infrared detectors and processed into tangible carbon and sulfur concentrations. By providing a high pressure, oxygen-rich environment in the furnace, the sample material and accelerator combust, reaching temperatures above 1,500C, while liberated carbon and sulfur compounds are oxidized to form carbon dioxide and sulfur dioxide.

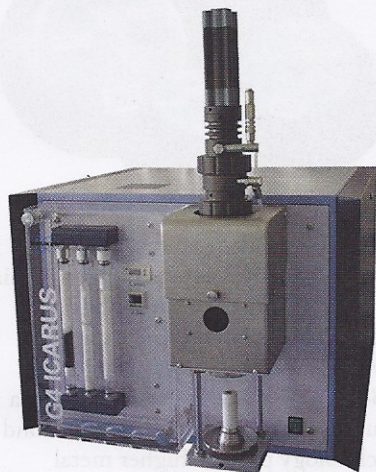
The G4 ICARUS features a viewing port on the front of the furnace to allow users to monitor the combustion process in real-time. The extraction nozzle directly above the furnace removes the gaseous components from the furnace to be transported downstream for eventual detection. Destructive byproducts that can splatter against the surrounding quartz combustion tube also are extracted by the nozzle. According to Bruker, users benefit from limited dust contamination with improved analytical results



This block diagram depicts the primary components of the G4 ICARUS CS HF and the analytical flow path.

and extended quartz tube lifetimes.

The combusted gas stream exiting the furnace area is directed through a drying reagent to remove any moisture that may have been produced or released during combustion. Pressure and flow regulating components ensure consistent



The Bruker G4 ICARUS CS HF carbon and sulfur analyzer features automatic cleaning.

combustion, transport and detection from one analysis to the next.

The purified gas stream is quantified using selective and stable non-dispersive infrared detectors, which respond exclusively to the amount of carbon dioxide and sulfur dioxide in the stream. After sulfur is detected, the gas stream flows through a heated oxidation furnace to catalytically oxidize carbon monoxide to carbon dioxide and convert some of the sulfur dioxide to sulfur trioxide. Sulfur compounds, which are no longer needed, are removed by passing the gas stream through cellulose. The gas stream comprised of oxygen, carbon dioxide and possibly a small amount of non-oxidized sulfur dioxide, flows through a selective carbon dioxide cell to measure the carbon content before exiting through the exhaust.

The analysis time for a single analysis with the Bruker GH ICARUS is nominally 40 seconds, depending on

the sample application, sample mass and carbon/sulfur concentration. **MC**

Visit www.bruker-axs.com for more information.



The new furnace autocleaning feature is found standard with the G4 ICARUS.

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