SmartNotes

How can you reduce helium consumption on the Thermo Scientific FlashSmart Elemental Analyzer?

Recently, laboratories have suffered from increasing analytical costs due to worldwide reduced availability and higher market prices of helium. Elemental analyzers, including the Thermo Scientific™ FlashSmart™ Analyzer (Figure 1), use helium as a carrier and reference gas during periods of sample analyses and instrument Stand-By Mode. There is therefore a demand for reduced helium consumption or the use of an alternative gas, such as argon, which is more readily available and at lower cost compared with helium.

The FlashSmart Analyzer allows the user to optimize helium consumption in a number of ways, as described in Table 1.

Thermo Scientific FlashSmart: THE Elemental Analyzer

Figure 1. Thermo Scientific FlashSmart Elemental Analyzer.

ThermoFisher SCIENTIFIC

thermo scientific

Table 1. Optimization methods for lower helium consumption.

Option	Option 1	Option 2	Option 3	Option 4	Option 5
Analytical configuration	Typical Stand-By Mode	EV3 and EV4 closed and Stand-By Mode	Switch to Nitrogen Gas and Stand-By Mode	MultiValve Control (MVC) Module	Argon Carrier Gas
	All	All	All	CHN/O, CHNS/O, CHN/CHN, CHNS/CHNS, CHN/S, NCS/O	N Org, N/Protein, NC Org, NC Soils, CHN
How do you use it?	Through the dedicated Eager*Smart* Data Handling Software. The Stand-By function can be selected before starting your sequence or activated manually after analyses have completed. The status page provides real time information on the conditions of the Analyzer. To return to analytical conditions, you can use the Auto-ready Function in the Eager*Smart* Data Handling Software.	Through the Eager*Smart* Data Handling Software. EV3 and EV4, electrovalves of the EFCt (thermoregulated Electronic Flow Controller) close the Carrier and Reference pneumatic circuits during the Leak Test. During the test, the Carrier and Reference flows are less than 3 ml/min if the system is leaks free. To return to Ready conditions, the Leak Test is stopped.	On the rear part of the instrument a three-way valve can be installed in the Helium Gas Inlet Port, which allows manual switching between nitrogen and helium gas. The nitrogen can come from a nitrogen gas bottle or a nitrogen generator. To return to analytical conditions, you manually switch from nitrogen to helium.	Through the software Eager*Smart* Data Handling Software. The MVC Module saves helium carrier gas by switching automatically to nitrogen or argon for instrument Stand-By Mode.	Dedicated kit for argon gas. Fully controlled through the Eager*Smart* Data Handling Software. The Stand-By Mode can be selected before starting your sequence or activated manually after analyses have completed.
Helium saving (Furnace temperatures are reduced by 50%)	You save greater than 90% of helium gas (Carrier and Reference)	100% helium saving because the system remains under pressure and there is no helium flow.	100% helium saving when using nitrogen gas during Stand-By Mode.	100% helium saving during Stand-By Mode, using nitrogen or argon as an alternative.	No helium is used. Argon flows (Carrier and Reference) are much lower than helium flows.
Stabilization time before you begin analysis	Less than 30 minutes from Stand-By Mode.	Less than 10 minutes after the Leak Test is stopped.	1 hour after switching from nitrogen to helium.	Less than 30 minutes from Stand-By Mode. One hour after switching from nitrogen/argon to helium.	Less than 30 minutes from Stand-By Mode.
Suggested use	Overnight, weekend, short and long periods.	Overnight, weekend.	Weekend or short and long periods.	Overnight, weekend, short and long periods.	Used as carrier gas for reduced analysis cost.

Summary

The Thermo Scientific Flash*Smart* Elemental Analyzer is a valuable solution for the quantitative analysis of one to five elements (nitrogen, carbon, hydrogen, sulfur and oxygen) in terms of accuracy, reproducibility, sensitivity, automation, speed of analysis and cost per analysis.

The cost per analysis is significantly reduced in the Flash*Smart* Elemental Analyzer through its modularity and software driven optimization of helium consumption, which meets laboratories demands for low costs.

The Thermo Scientific™ Eager*Smart*™ Data Handling Software, with its automated functions (Auto Stand-By, Auto Ready, Automatic Leak Test, Auto OFF, and more), seamlessly manages the system, maximizing laboratory productivity.

For more information, see Technical Note 42270.

Find out more at **thermofisher.com/OEA**

ThermoFisher SCIENTIFIC