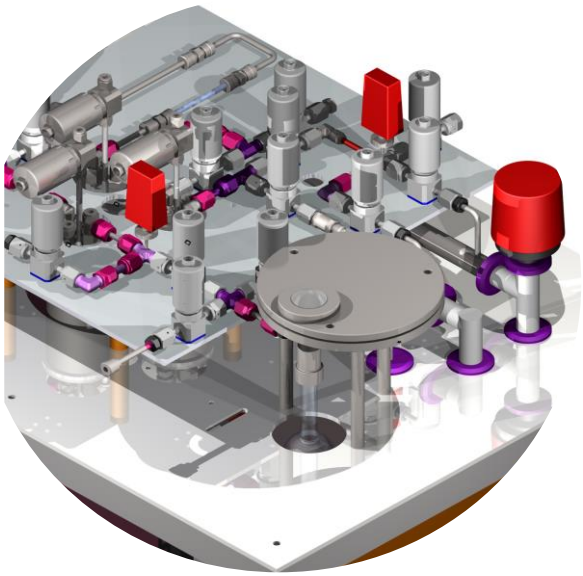
Isotope Batch Extraction System

IBEX Methane

Introduction

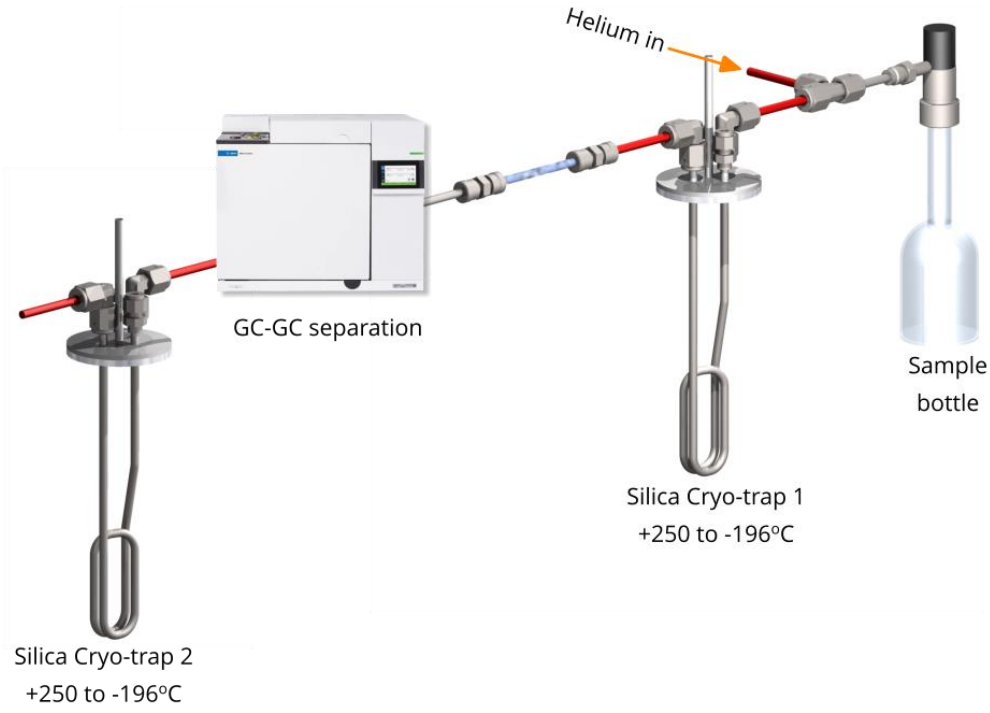
The IBEX methane is a fully automated system for the preparation and purification of CH_4 gas samples for clumped isotope analysis.

The IBEX can be integrated with most modern IRMS systems, including the Thermo Ultra. Gas connections are made directly to the IRMS bellows and/or systems inlet block.

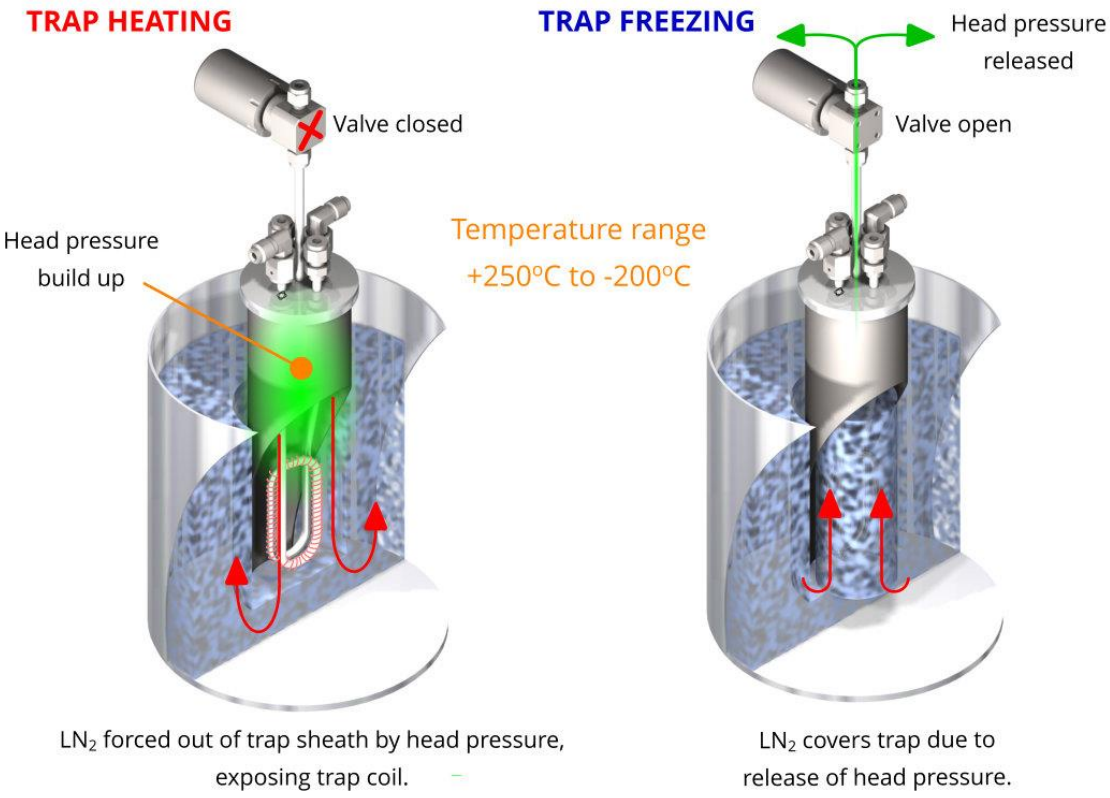


How the IBEX Methane works

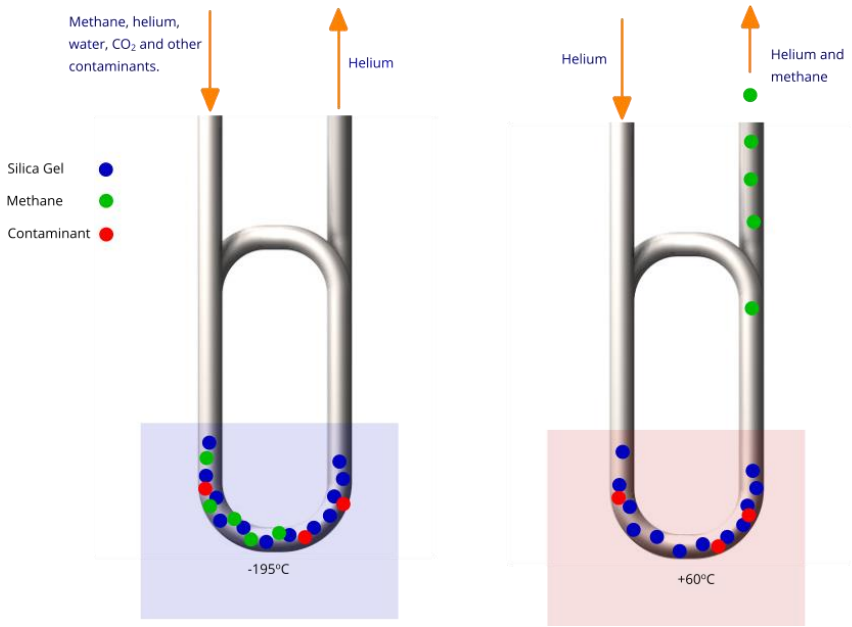
The IBEX uses a series of variable temperature silica traps and a GC-GC purification processes to clean CH_4 from gaseous samples.



The cryo-traps use a variable head-pressure system to raise and lower the liquid nitrogen level without physically moving the trap. This provides safe and accurate trap cooling and heating.

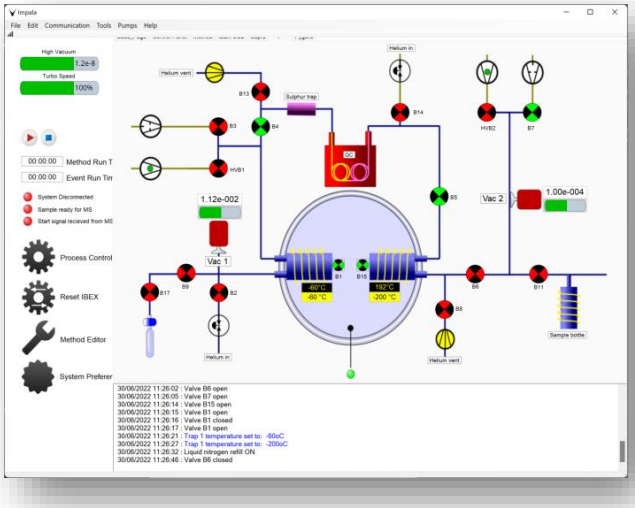


As the freezing point of CH_4 is close to LN2 temperatures, a silica stationary phase is added to the IBEX cryo traps. This ensures near 100% recovery of CH_4 samples.



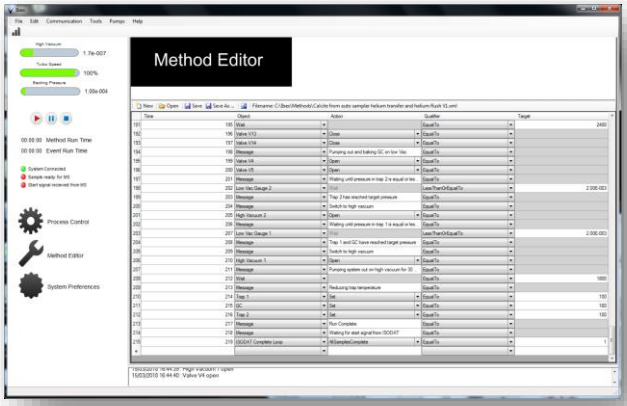
IBEX Control Centre Software

The IBEX Control Centre software (ICC) provides a fully integrated control and monitoring platform. Seamlessly linking with ISODAT sequence files, methods and scripting language.



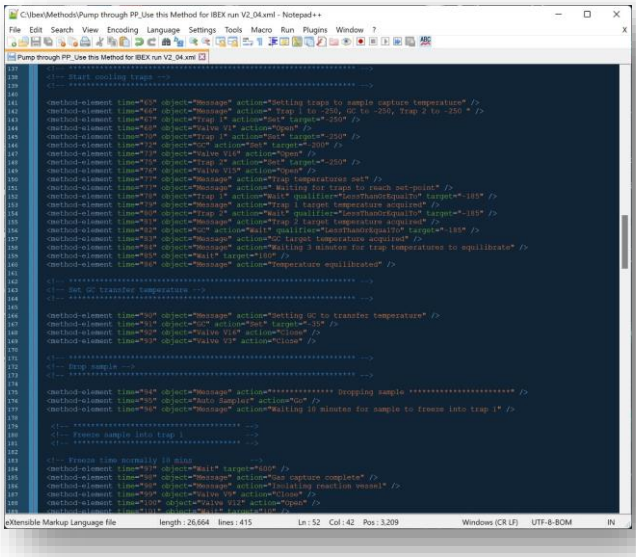
Real-time control and readbacks of all functional objects are accessible in the main ICC screen, including valve state, trap temperatures and vacuum pressures.

The addition of custom controls and objects is also possible using the systems plug and play options. This includes pressure gauges, valves and other bespoke equipment.



Custom analytical methods can be created using the ICC method editor. This requires no prior scripting or coding knowledge. New methods can be created and deployed in minutes.

Existing methods can be edited with a few mouse clicks.



Advanced users can also edit and deploy methods using any XML editor.

IBEX functionality and specifications

CRY0 TRAP PERFORMANCE

The system includes three silica cryo-traps (two water traps and one cold finger).

Water traps
Max Temp +250 °C
Min Temp -197 °C
CO_2 release temperature -105 to -80°C
Temperature increments 1°C

IRMS cold finger
Max Temp +130 °C
Min Temp -197 °C
CH_4 release temperature: +60°C
Volume 200 ml (can be altered on request).

LIQUID NITROGEN CONSUMPTION

Approximately 45 litres per day.

It is recommended that the customer provide a 90-litre (or larger) LN_2 storage vessel to supply the IBEX preparation system.

SULPHUR TRAP

Silver wool trap
Volume 3 ml

IBEX CONTROL CENTRE SOFTWARE

Compatible with ISODAT
Requires Windows 7 or above

VACUUM SYSTEM

1 x DX85 Edwards turbo molecular pump
2 x RV5 Edwards rotary pumps
1 x Edwards Penning gauge
2 x Edwards Pirani gauge
1 x Edwards TIC controller

Please note alternative components may be used if they provide better performance than those described above.

Vacuum Fittings

All Vacuum joints and seals use VCR connections. All tubing is Ultron finished or equivalent

Protium MS Ltd.
The Innovation Centre
Sci-Tech Daresbury
Keckwick Lane Daresbury
WA 4 4FS
www.protiumms.com

FS618518