



IGA SORP ULTRA

DYNAMIC VAPOR
SORPTION ANALYZER

**A COMPACT, AUTOMATED ANALYZER FOR
ADVANCED VAPOR SORPTION STUDIES**

Hidden Isochema is a world leader in the design and manufacture of high accuracy sorption instruments for research, development and production applications in materials science and related fields.

IGA ECOsorp

Dynamic Vapor Sorption
Analyzer for Carbon Capture



IGAsorp

Dynamic Vapor
Sorption Analyzer



XCS

Climate Control
Systems



ABR

Automated Breakthrough
Analyzer



XEMIS

Next Generation Gravimetric
Sorption Analyzer



IMI

High Accuracy Hydrogen
Storage Analyzer



MBR

Membrane Permeation
Analyzer



IGA

Gravimetric Gas
& Vapor Sorption Analyzers



Full details on our complete range of products and services are available on our website.

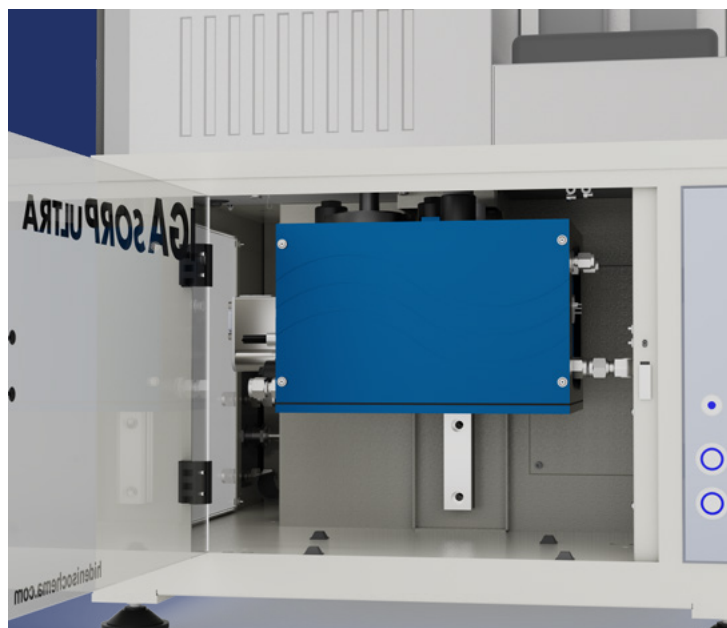
www.hiddenisochema.com



IGAsorp Ultra combines class-leading performance with intelligent engineering to elevate vapor sorption measurements. Complex experiments become seamless workflows, delivering clarity and confidence from start to finish.

Designed for maximum flexibility, **IGAsorp Ultra** is a compact dynamic vapor sorption (DVS) system built for modern laboratories.

Its next generation vapor sorption module unlocks a wider range of DVS conditions than ever before, enabling fast, stable and highly accurate studies across water and organic vapors. With robust engineering that maintains exceptional measurement reliability even under demanding environments, **IGAsorp Ultra** is the definitive choice for laboratories that value both innovation and dependability.



- ▶ **Dual vapor generators** for greater flexibility and higher throughput workflows
- ▶ Direct, traceable measurements for **real-time vapor concentration monitoring**
- ▶ **Exceptional temperature control and programmability** from 5 to 85 °C
- ▶ **Effortless sample loading**
- ▶ **Automation to streamline sorption workflows** with minimal user intervention

MEASUREMENT TYPES

- ▶ Isotherm and kinetics analysis
- ▶ Cyclic/lifetime studies
- ▶ Glass transition and amorphous phase detection
- ▶ Permeation and diffusion studies
- ▶ Hydrate/solvate formation
- ▶ Drying and dehydration

APPLICATIONS

- ▶ Pharmaceuticals
- ▶ Porous materials
- ▶ Polymers
- ▶ Food products and consumables
- ▶ Packaging materials
- ▶ Building and construction materials
- ▶ Natural materials such as woods and clays
- ▶ Energy and environment

NEXT GENERATION VAPOR SORPTION MODULE

IGAsorp Ultra's next generation vapor sorption module is a new, purpose built platform engineered to transform DVS analysis.

Its innovative design brings dual vapor generation, real-time vapor sensing and high-efficiency purging into a compact, integrated isothermal block.

The result? Water and organic vapor studies with **IGAsorp Ultra** are quick to setup, easier to control and deliver complete confidence in every data point.

KEY FEATURES

DEDICATED MULTI-VAPOR CHAMBER - Optimized for routine water and organic vapor studies.

DUAL VAPOR GENERATORS - Flexible solvent setup with rapid transitions.

RAPID, EFFICIENT SOLVENT CHANGEOVER - Preventing cross contamination between vapors.

REAL-TIME ORGANICS SENSOR - Direct partial pressure monitoring and control.

AUTOMATED GENERATOR REFILL - For prolonged unattended operation.



- 1 Next generation vapor sorption module
- 2 Dual vapor generators with shut-off valves
- 3 Sample chamber
- 4 Access port for microscopy and technique hyphenation



- 5 Vapor generator auto-fill inlets
- 6 Vapor generator level sensors
- 7 Vapor generator drains
- 8 RH Sensor
- 9 Organics Sensor

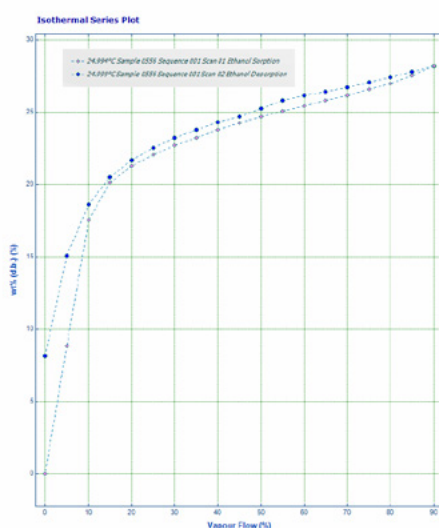
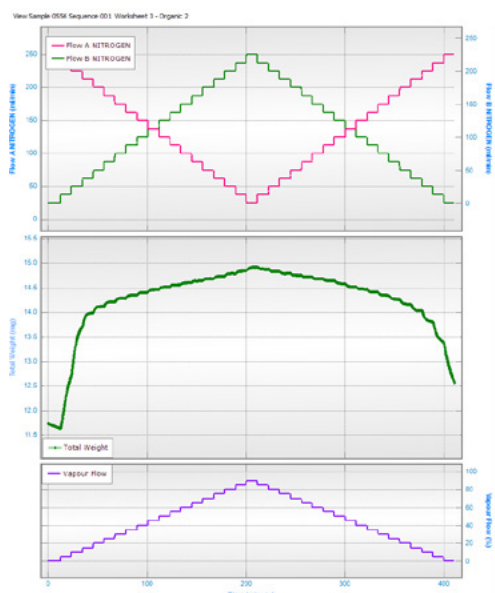
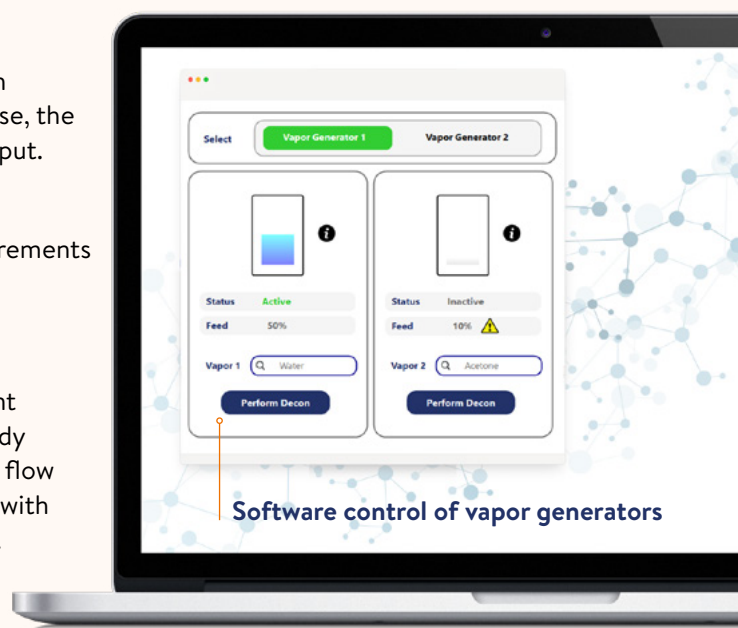
DUAL VAPOR GENERATORS

Two independent vapor generators give users the freedom to switch instantly between water and organic vapors. Whilst one vapor is in use, the next is ready to go – unlocking faster workflows and higher throughput.

- ▶ Compatible with water and a wide range of organic solvents
- ▶ Configure each vapor generator to match exact applications requirements

RAPID, EFFICIENT SOLVENT CHANGEOVER

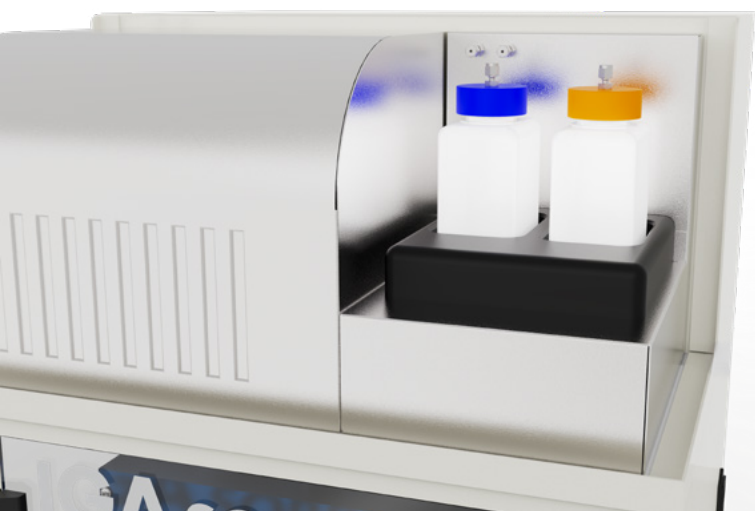
Automated purging eliminates unwanted contamination after solvent changeovers, delivering confidence that the system is clean and ready for reliable measurements. With low internal volumes and high total flow rates, purging is fast and controlled. The result is shorter workflows with no manual cleaning, and data you can trust from the very first point.



REAL-TIME VAPOR CONCENTRATION MEASUREMENTS

High accuracy sensors provide real time monitoring and control of relative humidity and organic vapor partial pressure. Programmed conditions are reliably achieved and held with exceptional stability.

IGAsorp Ultra delivers accurate measurements of isotherms and kinetics with organic vapors.



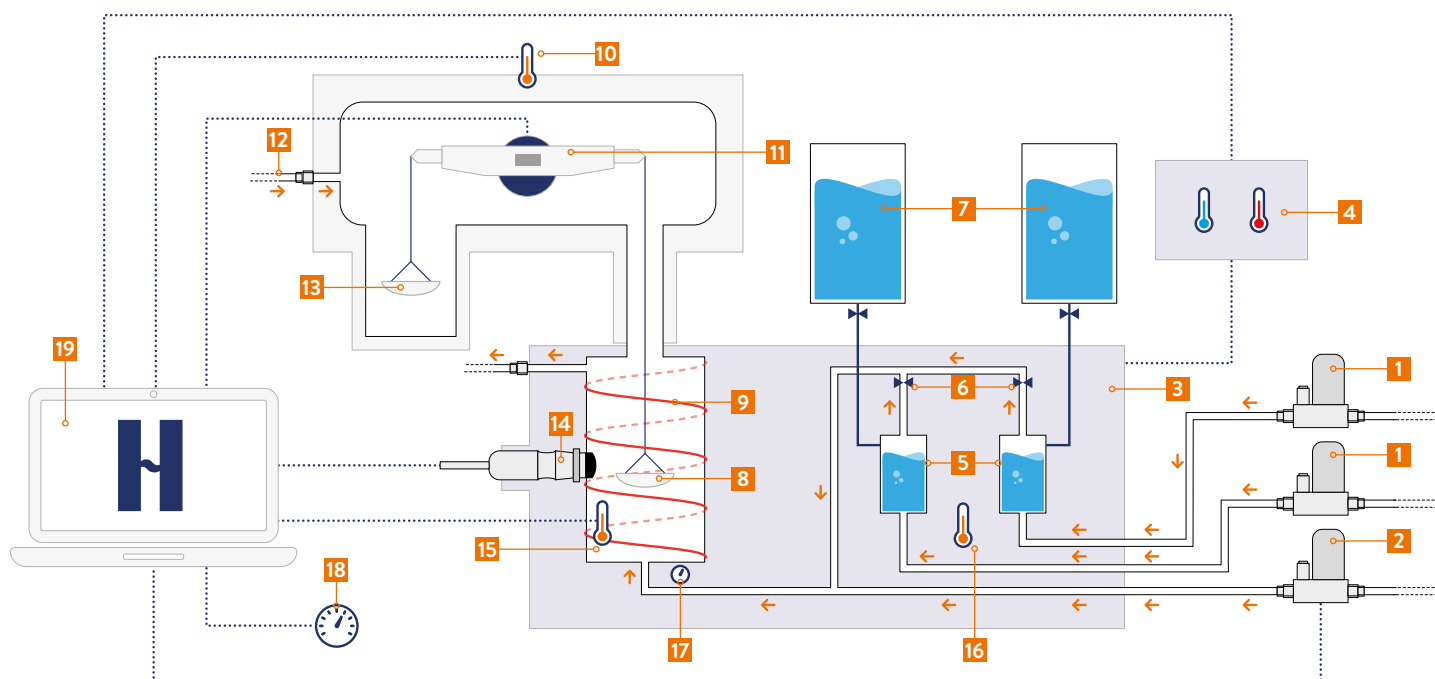
AUTOMATED GENERATOR REFILL

Each vapor generator is automatically refilled to a constant level by a dedicated, externally mounted 250 mL reservoir. This ensures vapor generation continues reliably and reproducibly throughout your measurement.

Topping up of the reservoirs is simple and can be done at any time without pausing or disturbing the experiment.

This design supports long duration studies, high quality data and minimal downtime, keeping your workflows running smoothly.

HOW IT WORKS



Mass Flow Controllers (MFCs)

- 1** MFC (wet)
- 2** MFC (dry)

Balance

- 10** Balance chamber with independent thermostat
- 11** Hiden Isochema microbalance
- 12** Balance purge
- 13** Counterweight

Vapor Sorption Module

- 3** Next generation vapor sorption module
- 4** Circulation thermostat
- 5** Dual vapor generators
- 6** Shut-off valves
- 7** External reservoirs
- 8** Sample
- 9** Integrated heater

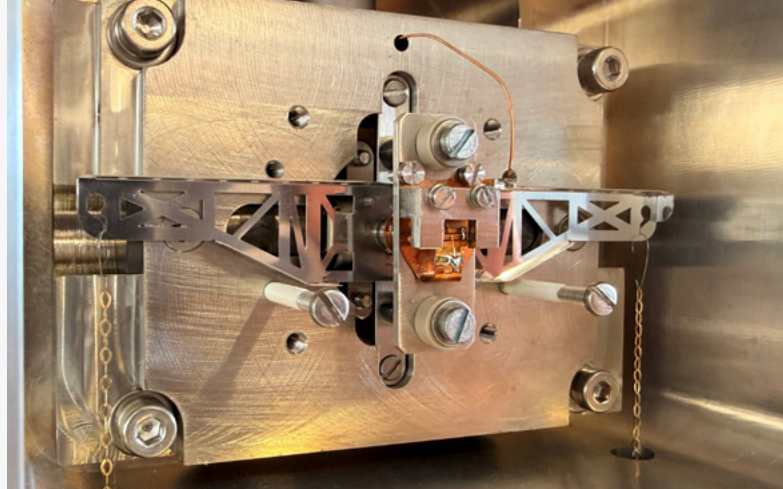
Software and Control

- 14** Color microscope (optional)
- 15** Sample temperature sensor
- 16** Vapor generator temperature sensor
- 17** RH and organic vapor sensors
- 18** Absolute pressure sensor
- 19** Instrument control powered by onboard firmware and HIsorp software

MICROBALANCE STABILITY YOU CAN SEE IN THE DATA

At the heart of every IGAcorp is Hiden Isochema's proven microbalance technology, delivering best in class weighing performance.

IGAcorp Ultra's independent balance thermostat ensures long-term baseline stability, enabling confident measurement of sub-microgram sorption events.



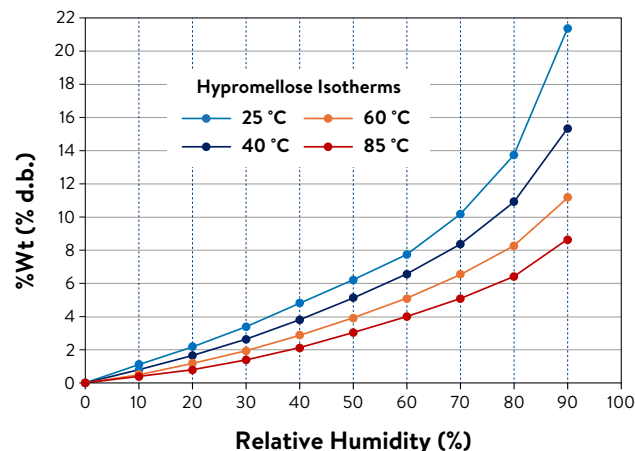
EXCEPTIONAL TEMPERATURE CONTROL AND PROGRAMMABILITY

The IGAcorp Ultra's next generation vapor sorption module delivers programmable, highly stable temperature control from 5 to 85 °C.

Its unique design, tightly regulated water circulation and multiple temperature sensors maintain an isothermal environment, achieving ± 0.005 °C stability over 24 hours.

With both sample and vapor generator temperatures held this precisely, sorption behaviour reflects your material, not changes in its environment.

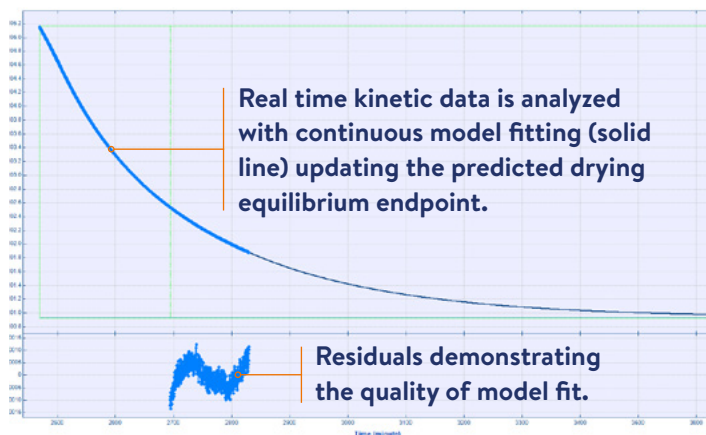
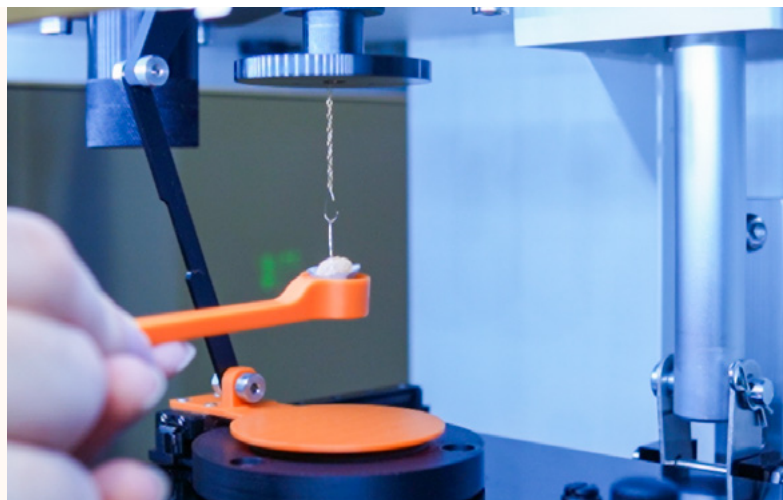
Different circulation thermostats are available with the IGAcorp Ultra.



EFFORTLESS SAMPLE LOADING

Sample loading should be easy and stress-free – and with IGAcorp Ultra, it is.

The sample is fully accessible and well illuminated, allowing the sample holder to be positioned with a single finger or the dedicated sample loading tool. A unique automated shield protects the chamber during loading and retracts smoothly when the chamber is raised, ensuring trouble free sample loading.



SUPERIOR CONFIDENCE IN DRY STATES

The IGAcorp Ultra achieves exact 0.0 %RH or 0.0 P/P₀ environments through controlled isolation of the sample chamber.

Drying at elevated temperatures is also possible with the system's integrated heater, which can heat up to 350 °C.

Only IGAcorp systems offer advanced kinetics modelling for accurate end-point determination of drying processes.

HISORP

USER-FRIENDLY, VERSATILE SORPTION SOFTWARE.

FLEXIBLE EXPERIMENTAL DESIGN

The **Hisorp** software provides a highly adaptable environment for setting up and managing experiments, all within a clean, user-friendly interface.

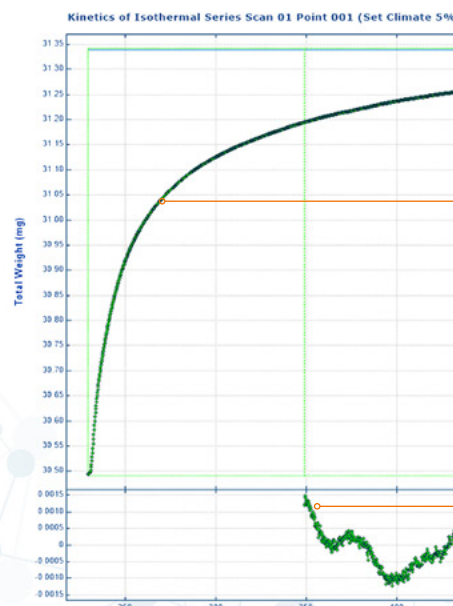
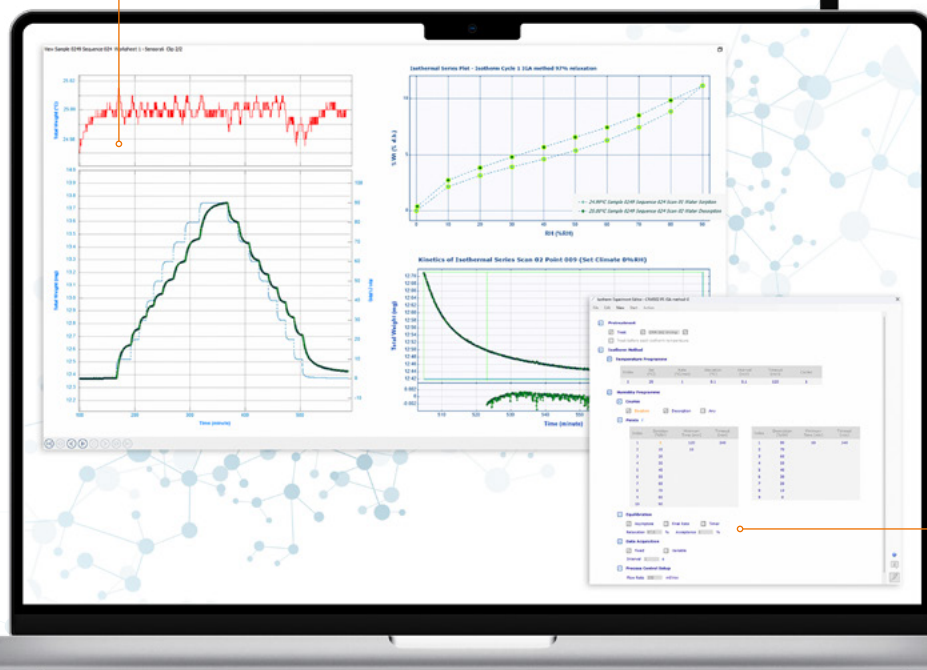
Easily create, modify, and save experimental templates for a wide range of applications – from isothermal sorption and thermal desorption to cyclic stability testing.

ADVANCED CONTROL & AUTOMATION

Hardware and software work together to make sorption workflows effortless, with key operations automated to minimize manual steps and keep experiments moving.

The vapor sorption module raises and lowers automatically, and multi step sequences give full control over temperature, vapor composition, and flow rates. From simple isotherms to complex multi vapor programmes, the **IGAsorp Ultra** makes advanced sorption design straightforward.

Hisorp software display showing plots of acquired kinetics data and the measured isotherm for microcrystalline cellulose. Each plot updates in real time as the experiment progresses.



Isotherm
experiment
editor

GUIDED WORKFLOWS & EFFORTLESS OPERATION

With guided workflows and ready to go method templates, starting a measurement is simple - load the sample, choose the method, and press Start.

Data processing, visualization and export are included in the same unified environment too - no additional tools required.

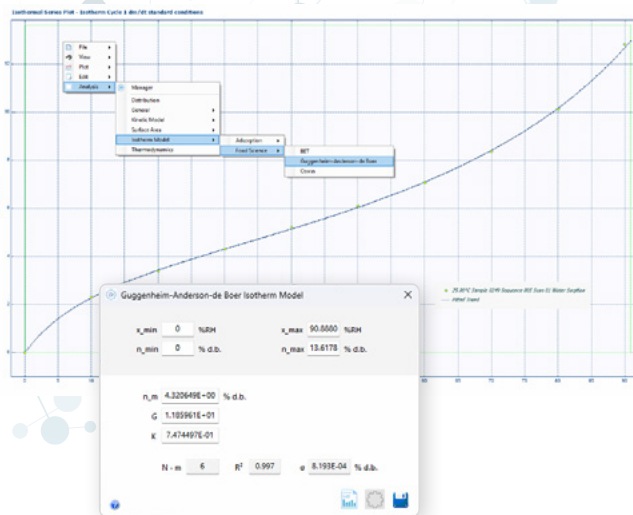
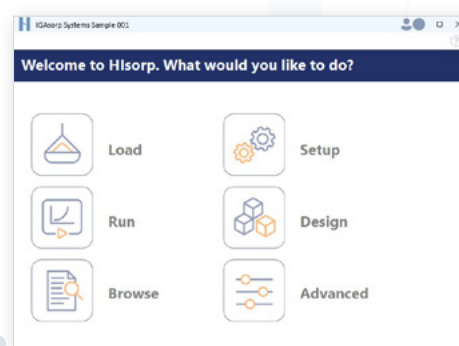
DATA SECURITY & ACCESS CONTROL

Hlsorp is fully compliant with the **US FDA's 21 CFR Part 11**, with data security, user managements and audit trail features.

Role-based access also ensures consistency in regulated or multi user laboratories.

REAL TIME DATA & DEEP ANALYSIS TOOLS

Monitor experiments live with real-time isotherm updates and access a full suite of data analysis features. Perform isotherm modelling, kinetic studies, surface area calculations, and thermodynamic evaluations - all within the same software.



UPPER PLOT

Real time kinetic data is analyzed using the IGA method, with continuous model fitting (solid line) updating the predicted equilibrium endpoint.

LOWER PLOT

Residuals demonstrating the quality of the model fit.

In this example, after around 6 hours of data collection, the IGA method predicts the equilibrium uptake and advances the experiment, avoiding the full 9 hour wait required for natural equilibration.

ACCELERATED ACCURACY WITH IGA METHOD

The IGAsorp Ultra applies the unique IGA method to capture both kinetics and equilibria with exceptional accuracy. Optimized equilibrium detection shortens experiment times while maintaining consistency.

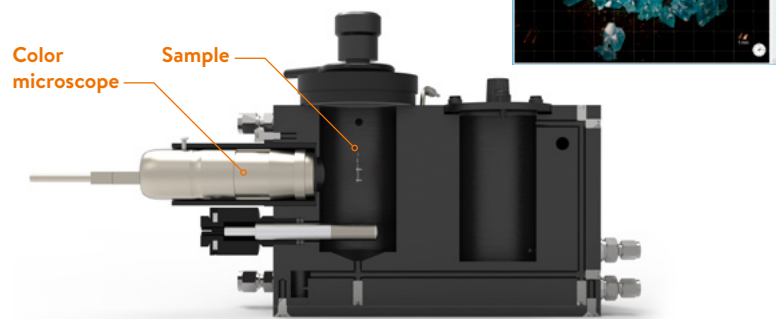
Real-time modelling of weight - time data predicts equilibrium and applies objective criteria automatically, ensuring reliable, repeatable results.

ACCESSORIES

COLOR VIDEO MICROSCOPE

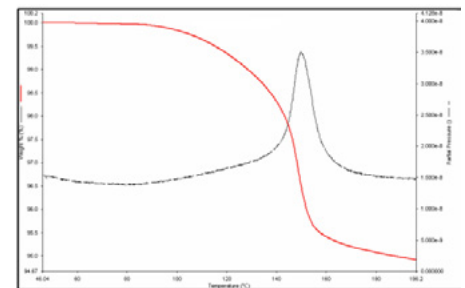
Capture high-resolution visuals during sorption experiments with the **IGAsorp Ultra's** integrated video microscope, fully controlled via the HIsorp software.

Images can be collected at defined points in the measurement programme or at custom capture intervals, with reliable performance up to 350 °C – ideal for monitoring material changes, activation processes, or sample integrity throughout testing.



MASS SPECTROMETRY

The **IGAsorp Ultra** supports hardware and software interfacing with Hiden Analytical's **HPR-20** series of dynamic sampling mass spectrometers – allowing users to benefit from the powerful combination of vapor sorption and TGA-MS analysis in one installation.



SPECIALIZED SAMPLE HOLDERS

IGAsorp Ultra offers a choice of **specialized sample holders**, including holders for powders and liquids as well as the **membrane permeation cell** for accurate measurement of **moisture vapor transmission rates (MVTR)**. This flexibility ensures the system adapts to a wide range of materials and workflows.



PERFORMANCE VERIFICATION

Conformance test kits are also available, providing a simple, traceable way to verify instrument performance. Integrated software workflows guide users through each step and automatically generate validation reports for confident, audit ready operation.



SUPPORT

At Hiden Isochema, we pride ourselves on delivering **industry-leading support** across our entire product range. From comprehensive training to **preventative maintenance and technical assistance**, we provide everything you need to get the **maximum return on your investment**.

What You Can Expect:

- ▶ **3-Year warranty** included as standard
- ▶ **Lifetime support** for every instrument
- ▶ **Preventative maintenance plans** and **extended warranty options**
- ▶ **Remote support** with **24-hour response** (UK working days)
- ▶ **Global network of trained engineers**
- ▶ **Flexible training options** for new and experienced users
- ▶ **Applications laboratory** for demonstrations and contract analysis

*“Hiden have always offered **exceptional after-sales care**. Whenever we’ve had technical issues, the team are **quickly reachable** via phone or email, and often resolve them swiftly with engineer instruction. It’s clear you’re **speaking directly with trained engineers** and product managers who **know the equipment intimately** and can explain even the most technical aspects.”*

MEET THE FULL RANGE

The Hiden Isochema benchtop range offers a solution for every laboratory - covering essential sorption analysis through to the most advanced multi solvent workflows.

With models tailored to different applications, performance levels, and budget requirements, **IGAsorp** ensures that whether you need reliable everyday measurements or maximum flexibility for cutting edge research, there is a system designed to meet your needs.



UPGRADE PATHWAYS: SCALABLE BY DESIGN

Start with the system you need today, and upgrade as your research grows.

IGAsorp evolves with your research, with accessories and hyphenation options tailoring the platform to your exact needs.

IGASORP CORE

Essential water sorption from 15 to 40 °C.



IGASORP SELECT

Adaptable DVS system. Temperature ranges starting from 5 to 50 °C.



IGA ECOSORP

Dedicated gravimetric analyzer for carbon capture applications. Combined water and CO₂ experiments.



IGASORP ULTRA

TECHNICAL SPECIFICATIONS

It is Hiden Isochema's policy to continually improve product performance and therefore specifications are subject to change.

WEIGHING

Hiden Isochema microbalance with independent thermostat

Balance capacity	1 mg to 5 gram
Weighing range	25 / 200 / 500 / 1000 mg (fixed) or user selectable (optional)
Resolution	From 0.01 microgram
Balance noise	< 0.1 µg RMS over 24 hours

TEMPERATURE

Temperature control options	▶ 15 to 40 °C ▶ 5 to 60 °C ▶ 5 to 85 °C ▶ 5 to 300 °C
Control accuracy	±0.005 °C
Pre-heater maximum temperature	Up to 350 °C
Pre-heater ramping rate	0.1 °C to 10 °C / min (programmable)

HUMIDITY

Humidity control range	0 to 98 %RH for 5 to 80 °C, up to 85 %RH at 85 °C
Control accuracy	± 0.01 %RH
Measurement accuracy	± 1 %RH (0 – 90 %RH) ± 2 %RH (90 – 100 %RH)

ORGANIC VAPOR GENERATION WITH DEDICATED SENSOR

Partial pressure range	0.0 to 0.9 P/P ₀
Measurement resolution	0.1 %
Measurement accuracy	±1%

GAS FLOW

Carrier gas flow rate	100 - 500 mL/min (programmable)
Carrier gas supply	Dry air / nitrogen / helium

GENERAL

Dimensions	480 (width) x 550 (depth) x 570 (height) mm
Weight	60 kg
Electrical	110-240 V a.c. 50/60Hz

CONTACT US

If you have any questions about IGAsorp Ultra or any of Hiden Isochema's products or services, please get in touch.

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