

Hidden HPR-90

A sealed package gas analyser with integral package cracker for lamp gas analysis

Introduction

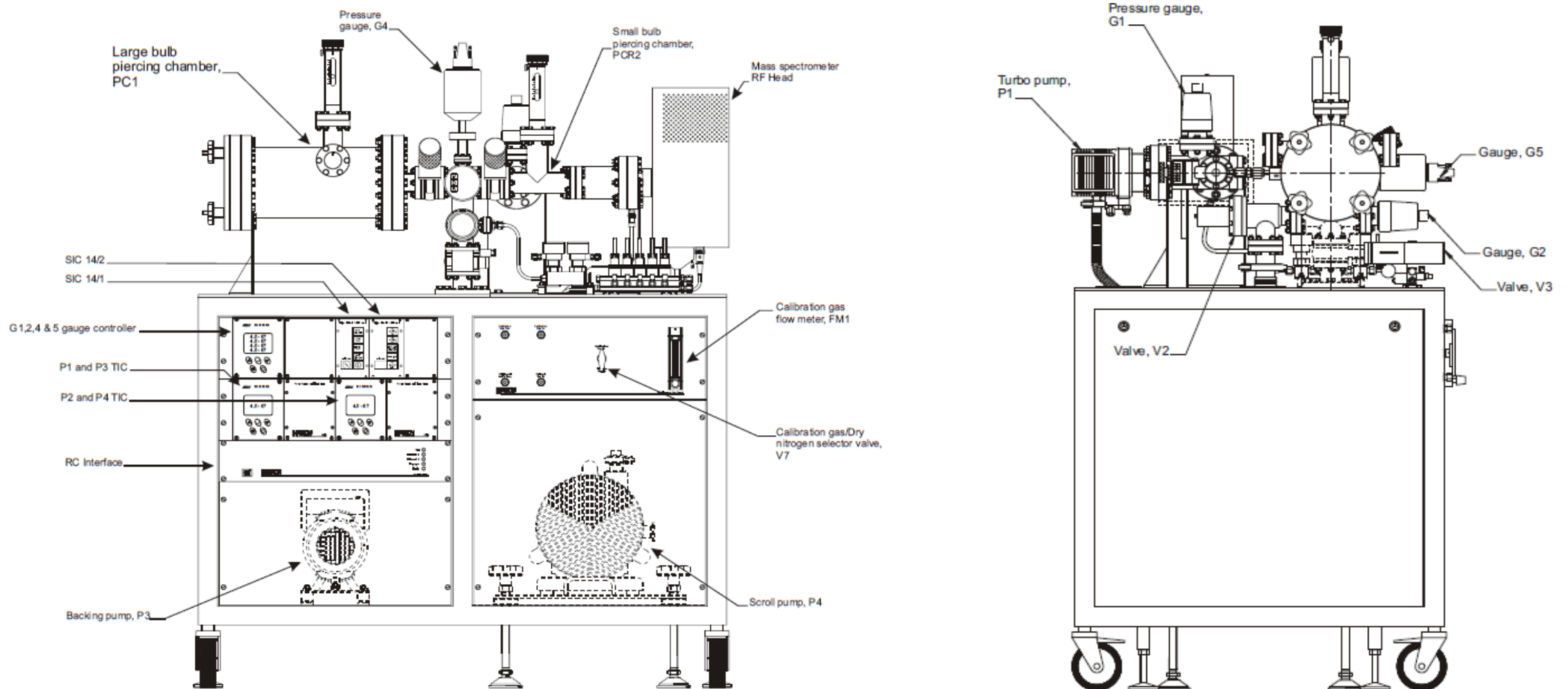
The HPR-90 automated package cracking analysis system is a unique dedicated system for the analysis of fill gases of **light bulbs and other sealed packages**.

The HPR-90 system is designed to analyse the fill **gases and vapours** of a wide range of electric light bulbs and other sealed packages. These can range in size from small automobile bulbs to street bulbs and fluorescent tubes. The automated package cracking system comprises a piercing unit, UHV manifold and sampling system, a triple filter quadrupole mass spectrometer and all the associated control equipment mounted on a mobile cart.

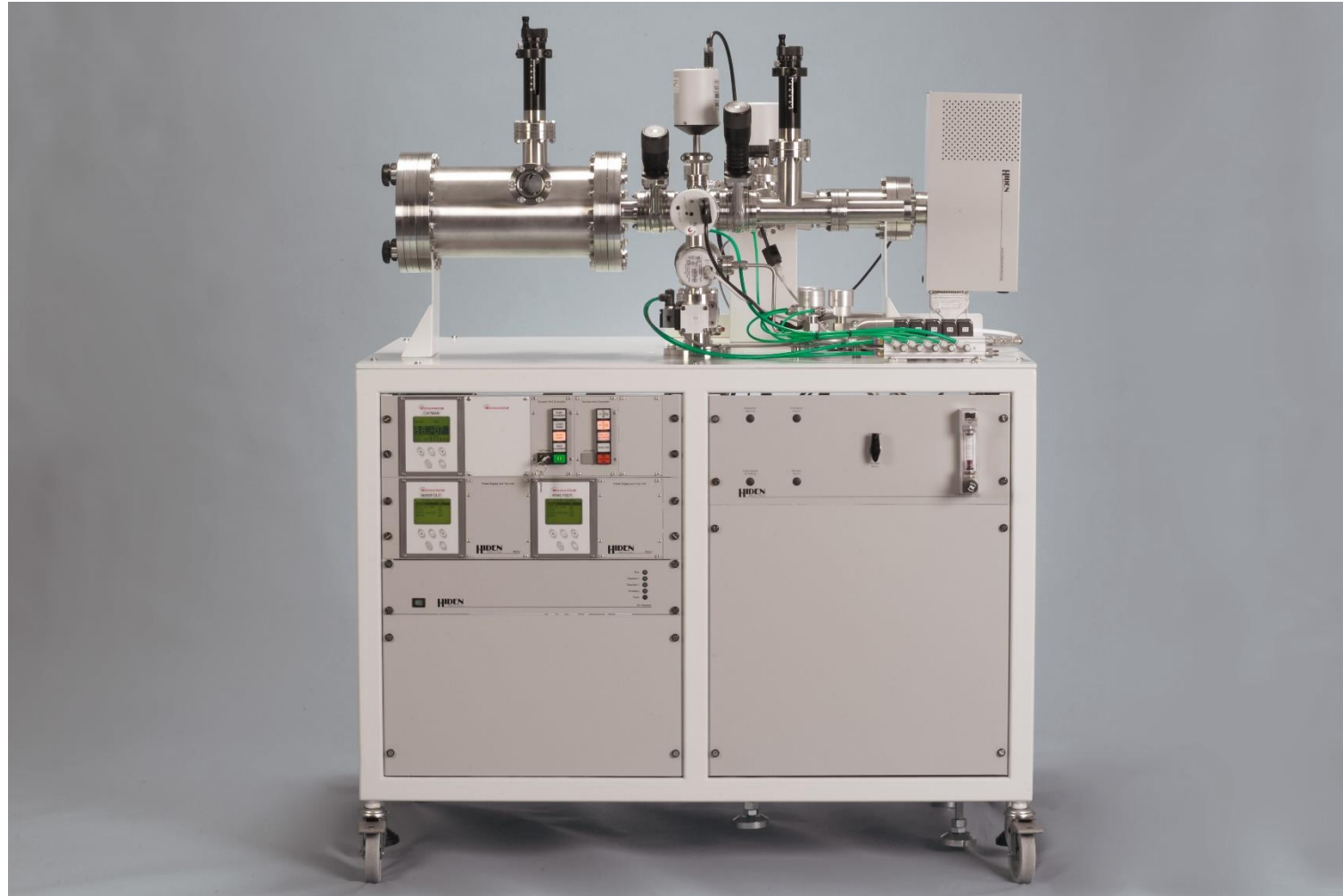
The HPR-90 has a mass range of **300 amu**, a mass spectrometer with mass range to **1000 amu** are available for specialised applications.

The HPR-90 system package cracker chamber is available in a range of sizes, custom configured to accommodate the package size, and provide minimum dead volume/surface area for optimum sensitivity for analyses of fill gases and fill gas contaminants.

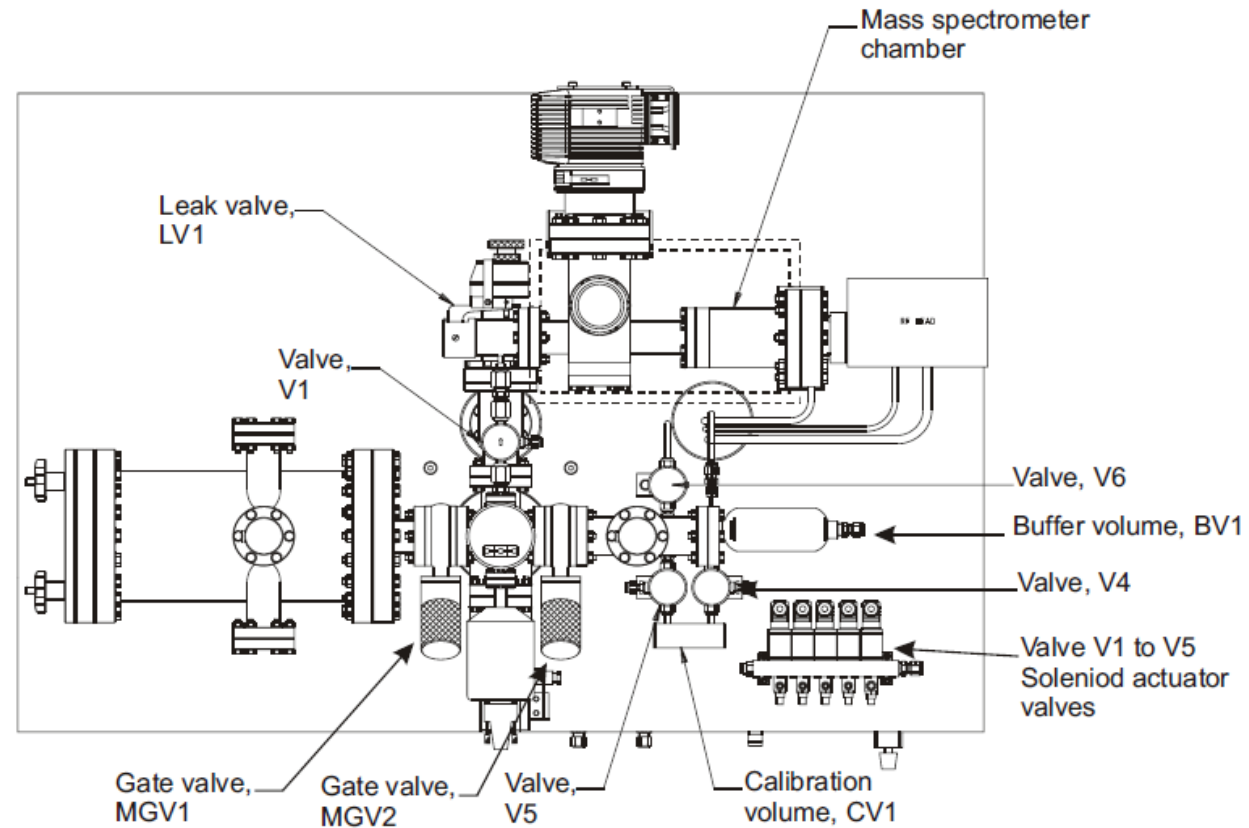
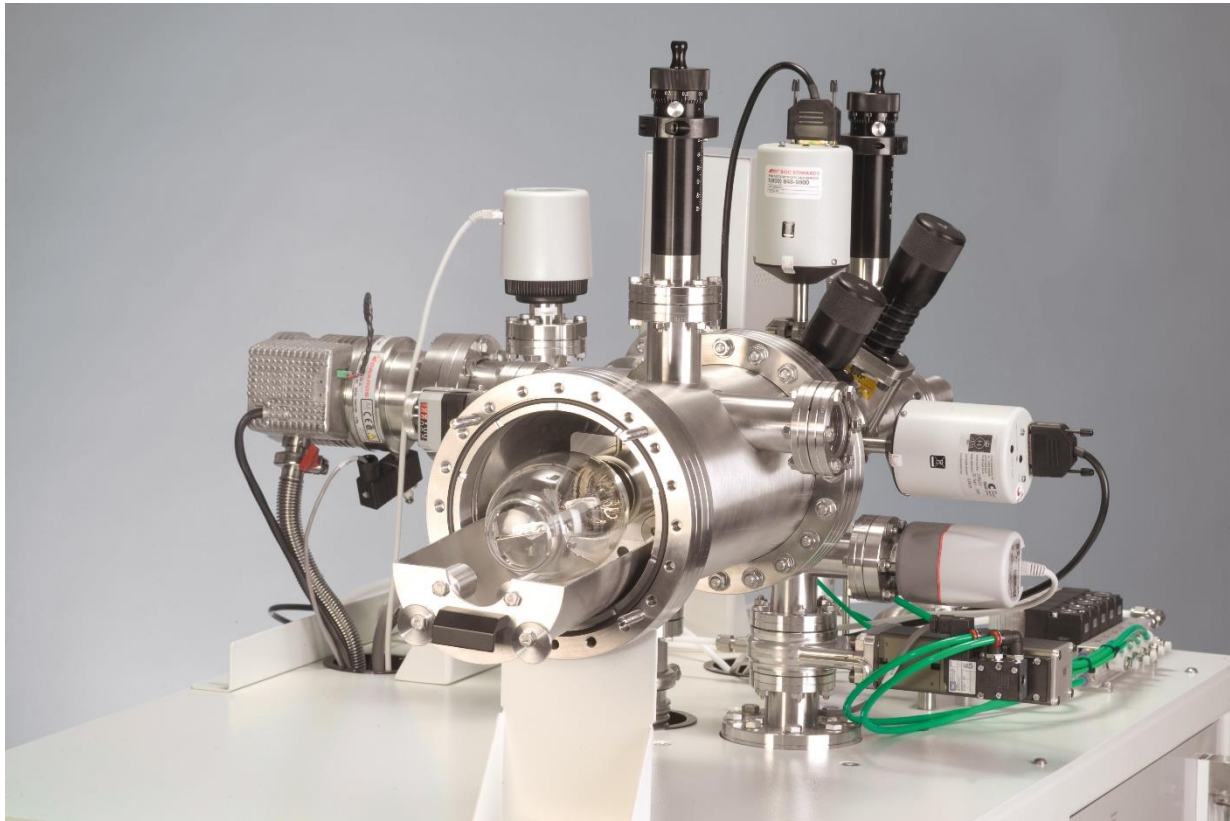
HPR-90



HPR-90

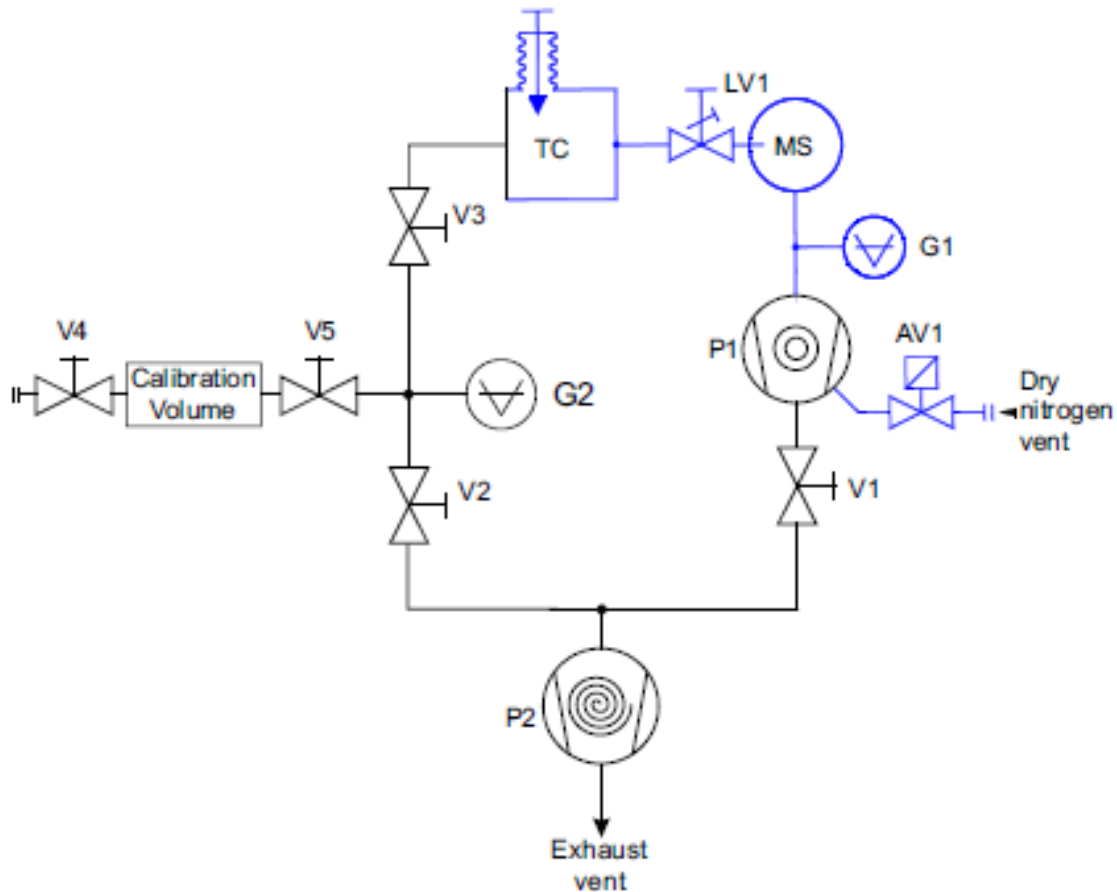


Package Cracking Chamber



The HPR-90 system package cracker chamber is available in a range of sizes, custom configured to accommodate the package size, and provide minimum dead volume/surface area for optimum sensitivity for analyses of fill gases and fill gas contaminants.

HPR-90 Vacuum Schematic



- P1 - Mass spectrometer chamber main vacuum pump, 70l/s turbo drag pump
- P2 - System low vacuum pump, 5m³/hr scroll pump
- G1 - Mass spectrometer chamber total pressure gauge, cold cathode gauge
- G2 - Test chamber total pressure gauge, wide range gauge.
- AV1 - Turbo pump P1 automatic vent valve.
- LV1 - All metal leak valve.
- MS - Mass spectrometer vacuum chamber
- V1 - Mass spectrometer chamber backing line isolation valve.
- V2 - Inlet system isolation valve.
- V3 - Test chamber isolation valve.
- V4 - Calibration gas / Test chamber vent shut off valve.
- V5 - Calibration volume isolation valve
- TC - Test Chamber

MASsoft Professional Control Software

The screenshot displays the MASsoft 10 software interface, which is used for controlling mass spectrometers. The main window shows a 'Real time trend analysis' plot with the y-axis labeled 'SEM: VV' and the x-axis labeled 'Time m:ss'. The plot shows several peaks corresponding to different components: Water, Ammonia, Argon, Carbon Dioxide, Isopropyl alcohol, and Methyl Alcohol. The plot is overlaid with a 'Scan Editor' window showing a sequence of scans: Scan 1: mass 2.00, Scan 2: mass 18.00, Scan 3: mass 32.00, Scan 4: mass 40.00, and Scan 5: Pressure 0.40. A 'MID Mode' dialog box is open, showing a table of scan parameters and a 'Real time trend analysis' plot. The table lists the following components and their parameters:

Component	Mass	Mode	Detector	Range	Au.	Rel Sens	Rel SEM	Colour	Line
Hydrogen	2.00	Unknow	Faraday	-5	0.440	1.000	1.000	Aqua	Thin sc
Water	18.00	RGA	Faraday	-5	0.900	1.000	1.000	Lime	Thin sc
Oxygen	32.00	Unknow	Faraday	-5	0.860	1.000	1.000	Red	Thin sc
Argon	40.00	RGA	Faraday	-5	1.200	1.000	1.000	Blue	Thin sc
Pressure	0.40	RGA	Faraday	-5	1.200	1.000	1.000	Fuchsia	Thin sc

The interface also includes a 'Quick Start Tasks' panel on the left, a 'Scan Editor' panel on the right, and a 'MID Mode' dialog box. The bottom of the screen shows the Windows taskbar with the date and time: 17:37, 28/03/2018.

A multi-level software package allowing both simple control of mass spectrometer parameters and complex manipulation of data plus control of external devices.

Application Areas

- **Fill gas analysis** – Sealed package analysis – food packaging for example
 - **Quality control studies** – bubbles in glass for example
 - **Sealed volume analysis** – electronic device analysis for example



Key Features

- Hiden HAL 3F/301 triple filter quadrupole mass spectrometer
- Interchangeable cracking chamber with cracking mechanism
- Automated inlet with automatic leak valve including calibration gas inlet
- High sensitivity to < 10 ppm in a sealed package at 10 mbar
- Data can be collated with serial numbers from sample bulbs
- Mass range options to 1000 amu
- Automatic data reporting formats
- Supplied with a fully integrated twin bay mobile cart

Recent Customers



Summary

- A specialised system for the analysis of fill gases of sealed packages for research and quality control applications.
- Customisation available to accommodate a range of sample geometries and types.
- High sensitivity analysis to 5 ppb, mass range options to 1000 amu for high mass applications.

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- A photograph of a modern, two-story office building with a grey facade and large glass windows. The building has a prominent entrance on the left side. A large, semi-transparent white circle is overlaid on the left side of the image, containing text. The sky is clear blue, and there are some trees and bushes in the foreground.
- www.HidenAnalytical.com
 - The Hiden website is an excellent resource with product pages, brochures, catalogues, product pages with some application notes, presentation and other information.
 - Contact +44 1925 445225 for direct support.