

EcoSys - Man portable mass spectrometer system [mpms]

VOC's to PPT*
NOK, SOX HCL, HF
Up to 64 Species in Real Time
Identifies Unknowns
Tracks Identified Species
Advanced Software Suite
%, PPM, PPB, PPT and mg/M3 Displays
Remote operation via telephone line
Gas Purged Case
240VAC/110VAC 12VDC battery pack or car adaptor operation
*requires TDS accessory



EcoSys-P is the latest addition to the *advanced quadrupole mass spectrometer* range from E.S.S. The system takes full advantage of our experience in miniaturising mass spectrometer systems, whilst retaining the functional ability of a large laboratory system.

EcoSys-P is easily carried by an individual operator it contains space for a lap-top PC within the standard case, has a wide range of power supply options and operates in the closed position where it can be gas purged for hazardous area use.

The system comes complete with powerful software for fully quantitative analysis and the ability to fully automate any user operation [e.g. calibration] or perform automatic pre-programmed surveys. The system can operate in full remote mode via a single telephone line or cell-phone connection, with the link allowing for control, servicing and the two-way file transfer

EcoSys-P gives you full function laboratory standards in any field situation.

It's an open and shut case!

Eco-Sys-P is our most compact M/S system, so compact that we can even find room for a full size lap-top PC within the IP65 sealed, gas purged case. In open mode (as *shown here*) this provides a convenient working space for the operator and when closed allows everything you need to be carried in one hand. For hazardous area operation, the case can be closed (with *or without the PC inside*) and gas purged via the external purge connection.

If preferred, the back panel of the case allows for external PC connection and connection of peripheral equipment such as our Navigator multi-gas stream selector; user defined analogue and digital I/D. Serial communication between PC and M/S allows separation distances of up to 40M between sample point and operator.

The standard system can detect VOC's to single ppb level at very high speeds (*100ms per mass*) and has a sample transfer time between process event and M/S detection of <100ms for capillary versions and <1 second for membrane inlets.

The addition of an automatic thermal desorper allows detection to ppt levels but increases the point analysis time to 90 seconds inlet options are available for Ambient, Stack, Ducted, Head Space, Process, Source, Waste Water and Very High Temperature [130D degC] monitoring.

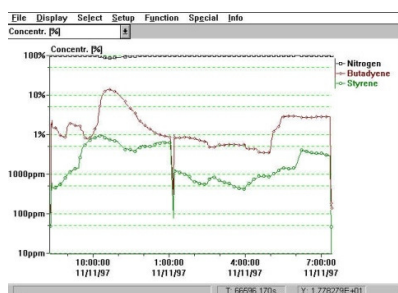
Survey Mode

In survey mode, EcoSys is able to make repeat scans over a range of atomic mass numbers. This could be a continuous scan across the whole mass range, a segment of the mass range or several segments of the mass range scanning sequentially. When a sample gas is passed over the inlet, a characteristic mass spectrum is produced with compounds identified by mass number and concentration directly related to intensity. This mode is useful where monitoring of unknown compounds is required.

For ease of data interpretation, a Library mode of over 100 spectra is included with automatic matching and data collected in survey mode can be replayed as a trend of ions against time to help identify any regular or time related releases,

This survey is from stack emission containing 1-3, Butadiene. Styrene and Acrylonitrile. Toluene and Benzene are also clearly visible.

Concentration Logging

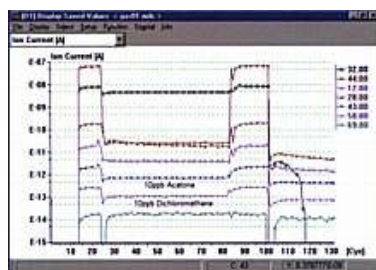


In Concentration Logging Mode up to 64 different mass species may be monitored as a trend against real time. Generally, species identified in survey mode would be used to clearly identify process trends. This mode requires a gas calibration to be made against a known standard gas and may be enhanced by the use of Zero Gas Subtraction from a pure [Zero] gas. Species which are enabled may be monitored at very high speeds if required, with minimum dwell time of only 20mS per species. For longer runs, software timing can be utilised to take measurements at a pre-set period which may be varied from seconds to days. Alarms and analogue outputs are available in this mode along with data storage and direct live export to other programs via *Windows Dynamic Data Exchange (DDE)*.

Our built-in software has powerful analysis tools for data files although data may also be converted to ASCII export format with a few mouse-clicks.

This concentration log is from a stack being monitored for Styrene and 1-3, Butadiene over a 12 hour period.

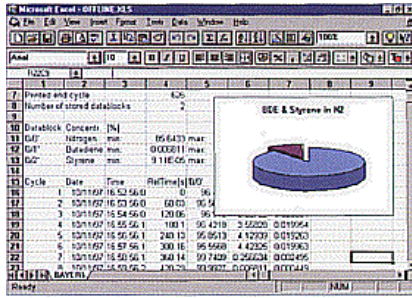
Detection Limits & Stability



EcoSys gives low detection limits and very high stability of signal with high sample rates for on-line monitoring in continuous applications.

This data shows 10ppb levels of Acetone and Dichloromethane being detected in a gas supply of pure Nitrogen. Similar detection limits and stability down to 1ppb are possible on BTX's in pure gas or ambient situations without the need for any additional equipment [membrane inlet system only]. Even lower detection levels are possible (ppt) with the addition of our *on-line thermal desorption accessory* the unit extends the minimum point analysis time to 90 seconds but is completely software controlled.

Off line Data Analysts



Although we offer powerful built-in data review, you can always choose net to use it!

Simple conversion of data taken in any operating mode to ASCII is built-in and requires just a few mouse clicks to complete. Data files are very simple to load and view in many popular spreadsheet formats, with any enabled analogue input sources also being converted with the M/S data. The example shows converted data from the stack monitoring test in Microsoft Excel with an exploded pie chart of data from a single measurement within the hundreds collected over the run.

Custom Software Features

Every system is supplied with a process control module built-in to the software. Users are free to develop programs with the features provided or have individual task software written directly by ESS. This mode is very powerful and has too many features to accurately list here, some popular examples however include :

- Using DDE to make bespoke operator interface designs in conjunction with Lab Windows CVI or Labview.*
- Automatic sequencing of multi-steam systems, Autocalibration, Analogue I/O control and alarms.*
- Direct two way communication between our software and others supporting Windows DDE format*
- Automatic sensing of alarm levels and determination of process control actions from complex data analysis.*

The example shows a screen created for the continuous monitoring of Benzene on 16 lines in the process plant pure gas stream. Data is sampled sequentially by the M/S and then averaged to produce a real-time process trend for any of the enabled species. On screen LED'S, text and digital readouts provide additional Process Information.

Remote Made Telemetry

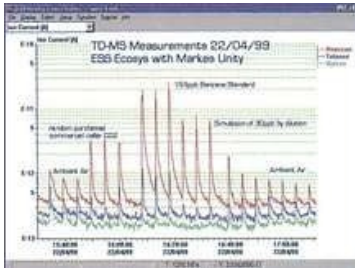
With the addition of a modem, support software and a telephone line [or cellular phone] the instrument is ready for full unattended operation. The modem link allows for the following actions:

File Download and Upload download data from the field and upload any program modifications direct from your office to the field system.

Full remote Control: view the system from any remote location with full access to all instrument control software. Also includes two way chat mode for communication with local operator.

Remote Diagnostic Support: This is a 24 hour additional cost option from ESS. Have one of our trained engineers on-line to solve your problems for you. We can perform 90% of all service actions over the telephone line I

Ultra Low Level Detection



The addition of an Automatic Thermal Desorption Unit as a bolt-on accessory allows rapid sample concentration for ambient air and ultra low level detection of VDC's. Fully automated on-line monitoring with injections every 4 minutes is easily possible for ambient air levels.

This data shows a range from clean ambient air through cellar CO2 gas to a 150ppb standard. Detection at one tenth of ambient (100ppt) is clearly attainable.

Accessories and Specification

EcoSys has a wide range of useful accessories for different field situations :

- Battery Pack
- Vehicle Power Adaptor
- Modem Link
- GPS
- Navigator
- Custom Software
- Membrane Inlet
- Capillary Inlet
- Headspace Probe
- Waste Water Probe

System Specifications

Dimensions:

- 620[w] X 570(h) X 23D[d] mm
- Power Sources: 240V AC or 110V AC at 170W
- 12VDC Via Vehicle Adaptor Kit
- 12VDC Via Battery Pack

Standard I/O
4 analogue outputs
2 analogue inputs
2 digital outputs
2 digital inputs
Operating Modes:
Analogue (raw data),
Histogram (Survey).
MID [Ion v Time).
MCD [Concentrations v Time)
Task Automation.

Detection Limits:

VOC's
<2ppb(std] or
<2ppt[with TDS]

Halogens:
<1ppm

General gases:
<10ppm

Response time:
<100ms(capillary)
<1S (membrane)
<90S [TDS]

PC Requirements

PC is normally supplied, 32 Bit.

Connection from the Mass Spec to the PC is via a standard network cable. The instrument can also be connected via a network or Internet connection.

Item	EcoSys-P
Gas Tight Ion Source	Standard
Capillary Inlet	Option
Membrane Inlet	Standard
Dual Inlet or Cap. & Membrane	Option *
Navigator™	Option *
User / ESS Task Scripting	Standard / Option *
DDE Linking	Standard
Remote Diagnostics	Standard
Host PC	Standard
TD/MS Link	Option *
TGA/MS Link	Option *

Analogue Inputs	Standard 2 off 10-0-10V
Analogue Outputs	Standard 4 off 5-0-5V
Digital Inputs	Standard 2 off TTL
Digital Outputs	Standard 2 off volt free contacts
Additional User I/O	Option to user specification *
Battery Pack / UPS	Option *
Vehicle Power Adaptor (12VDC)	Option *

Man Portable Mass Spectrometer System [MPMS)

Our Commitment...

The EcoSys series of instruments along with GeneSys and MedISys (the sister instrument range) represents all that is new in Quadrupole Mass Spectrometry and Pumping System Technology, Over twenty man-years of ESS expertise has contributed to the design of the EcoSys series, to deliver a product which sets the standard in low cost Portable systems.

We have an on-going commitment to our users, and we have designed EcoSys to provide you with years of reliable service

We install your EcoSys system at your site and we perform a series of stringent sign off tests before we hand it over.

We guarantee EcoSys for a full twelve months from purchase, along with your data system and all accessories.

We provide a range of user training options for your EcoSys system and installation includes a half day user orientation course.

We like to stay in touch with our users, you will find our factory contact numbers, E-mail and Internet World-Wide Web site address at the bottom of the page.

If you have a local sales and service agent, you will find their details below.