
SAFETY & SECURTIY

# Chemical Threat Detection

Enhanced Environmental Mass Spectrometer:
Bruker **E²M**

Innovation with Integrity

# Choose Innovation – Choose Bruker

Bruker is recognised as the leading authority on the use of detection and identification technologies to mitigate the threat from the accidental or deliberate release of toxic gases, explosives and radioactive materials that could kill and injure civilians.

We offer the world's most comprehensive range of threat detection and identification solutions and can help you to assess how these can be best employed to protect people and property.

We develop, manufacture and supply technology worldwide for a range of customers and end users that need to protect people and property.

These include, but are not limited to governments, commercial enterprises and multi-national corporations who need to protect their employees and clients from the ever-increasing threat from terrorism.

Bruker is strongly committed to meeting its customers' needs by continuing to revolutionise the design, manufacture and distribution of detection tools based on our core technologies; by providing solutions that are regarded as the 'Gold Standard' by threat mitigation experts.

# Enhanced GC/MS System: E²M

More than thirty years ago, Bruker introduced the world's first Mobile Mass Spectrometer. Now, building on our unique expertise in this mobile technology, the E²M (Enhanced Mobile Mass Spectrometer) represents our continuing commitment to the advancement of instruments designed both for environmental applications and for deployment by emergency services. The Bruker E²M is a compact, lightweight and rugged GC/MS (Gas chromatograph/Mass Spectrometer) system for fast, reliable onsite identification and quantification of a wide range of organic substances.

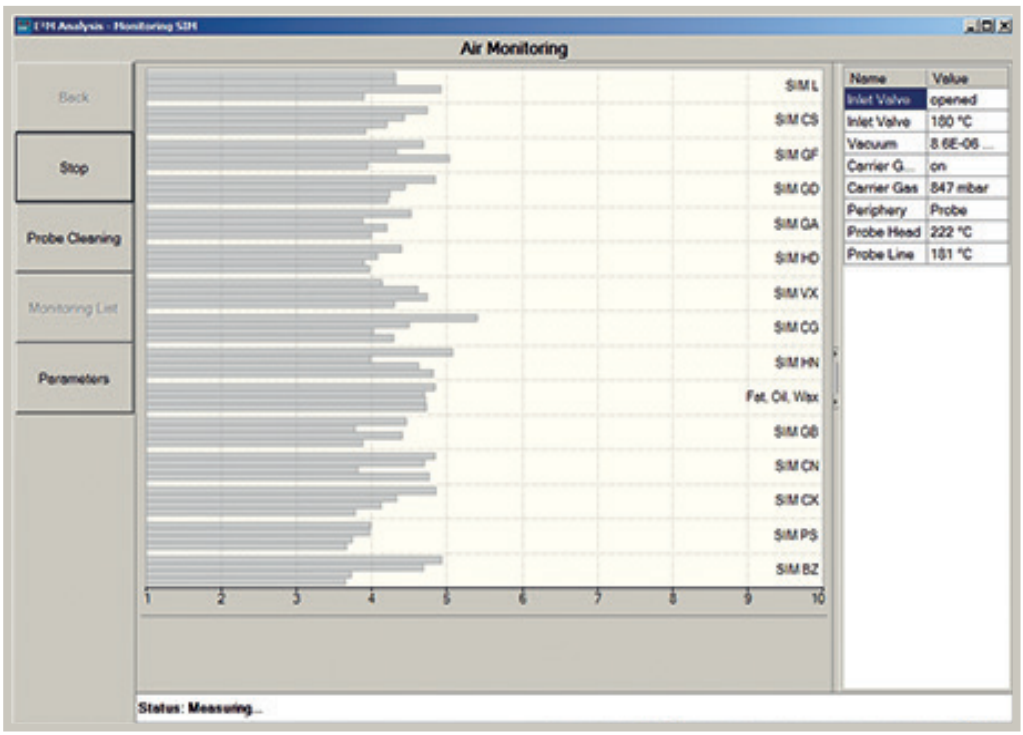
The unique attributes of E²M permit it to be used to identify organic chemicals from any medium, such as atmospheric pollutants, contaminants in soil, spillage or contaminants on hard surfaces and trace organic pollutants in water; using complementary sampling techniques. The analysis times using E²M is short, ranging from a few seconds for air pollutants with the air surface probe to twenty minutes for a full range separation and identification; producing results comparable to a laboratory-based system.


The E²M is a mobile, compact, lightweight and rugged GC/MS system for fast, reliable onsite dentification and quantification of organic substances in soil, air, water and from surfaces.

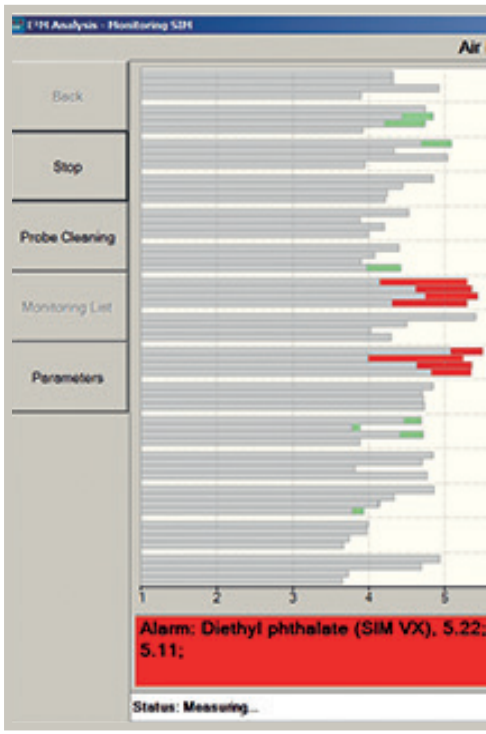
## Why specify E²M?

- Designed for on-site analysis of organic compounds
  Identifies thousands of substances!
- Designed for mobile applications
  Can be used in a moving vehicle
- Identifies organic substances in air, water and soil
  Meets your needs in a single instrument
- Unique air/surface probe system
  Offers extensive application flexibility
- Permanent vacuum system
  Provides a rapid start-up from cold
- Realises fast analysis times
  Just a few seconds for ambient air monitoring
- Designed for user-developed libraries
  Configure the instrument to your specific needs
- Reduced ownership costs
  Through minimum service requirements
- Calibration/verification at a reduced level
  Simplifies day to day operation
- NO bottles gases required
  E²M uses air as the carrier gas

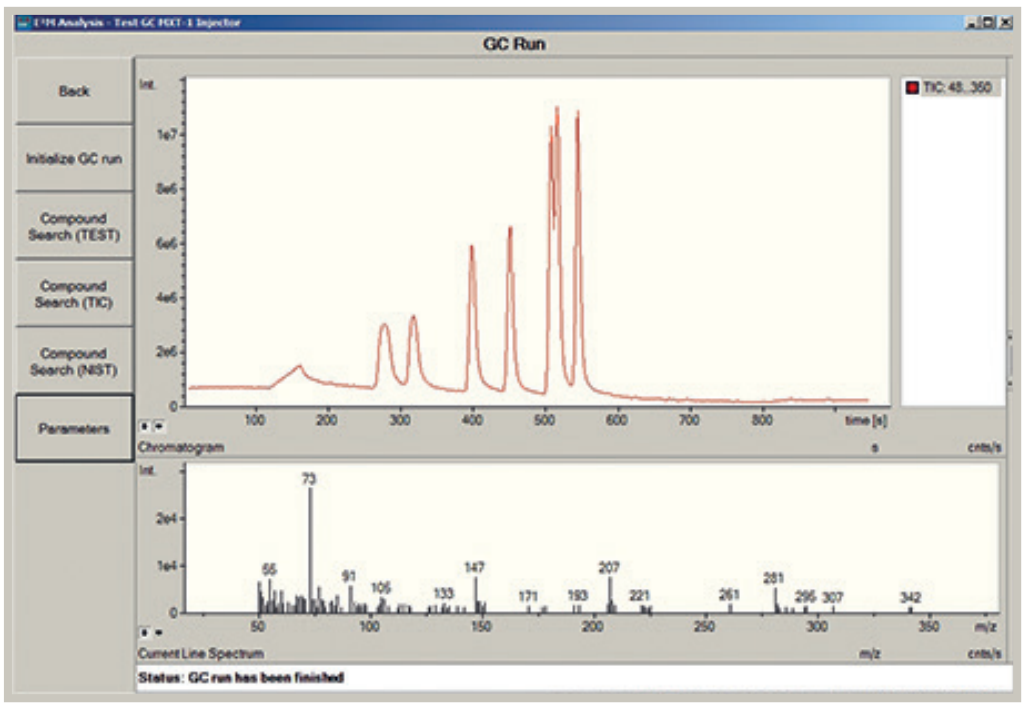
# E²M Control Software



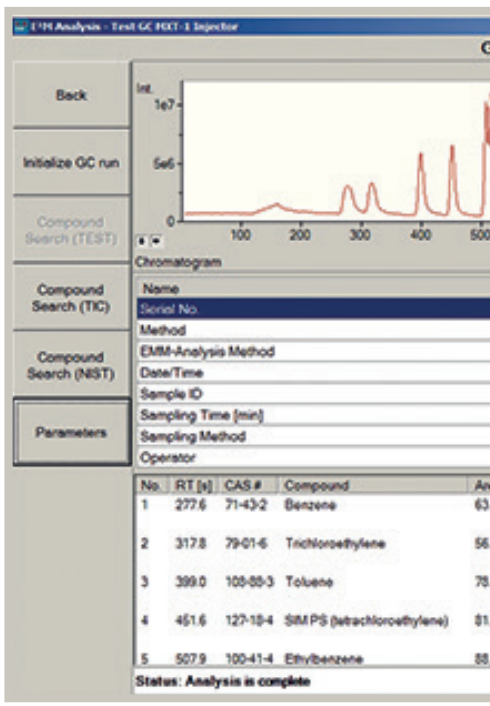

This air monitoring measurement uses a 'selective ion' approach. No compounds have been detected yet.



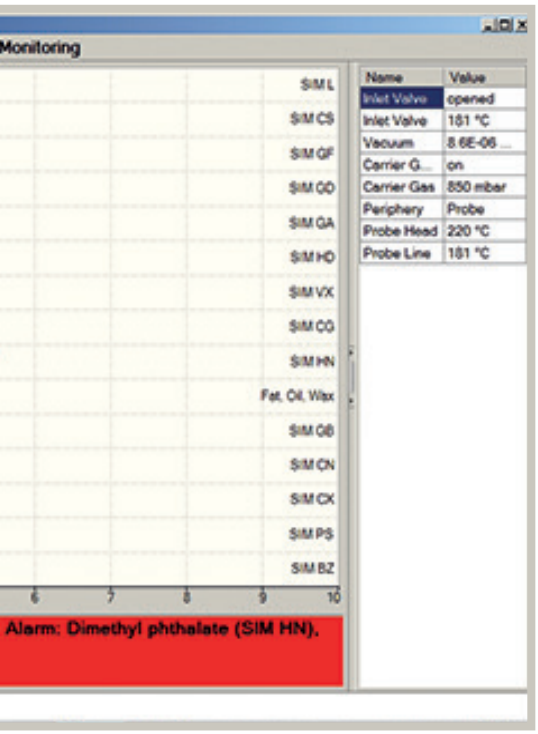

This air monitoring measurement has det simultaneously.



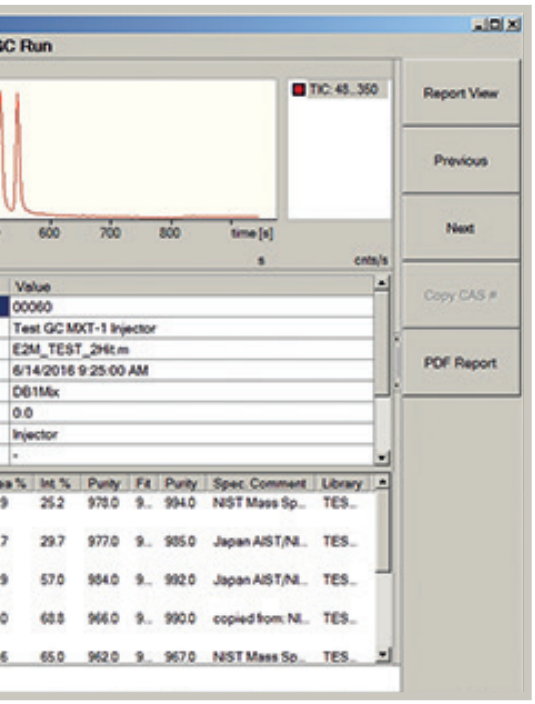

A GC run is underway, with mass spectra taken from the last emerged peak.




Here, the GC run has finished. The relevant




tected and identified two separate substances




mass spectrum identification has been generated.

## AIR MONITORING WITH E²M CONTROL SOFTWARE

### The E²M software includes all standard MS acquisition methods

- Full spectra acquisition; 1...520 da
- Single ion monitoring (SIM)
- Easy to use graphical user interface
- Adaptation to existing fire brigades SOP
- HAZMAT database linkage

The E²M is supported by new Software Modules for instrument control and data acquisition. The E²M Control (Advanced User) is used to set all parameters of the instrument and therefore to create new applications.

The E²M Analysis (Operator level) supports an easy and uncomplicated operation of the system for already prepared methods. Both software tools include the fully automated data evaluation based on the NIST spectra library (National Institute of Standards and Technology), and the Bruker TICLib (Toxic Industrial Compounds) or a customer specific libraries.

New user convenience features are included in the latest version of software. These include a dedicated system tuning button. When activated with a mouse click, this opens a page with system tuning buttons and help text.

In addition a new cleaning function provides the facility to remove contaminants, especially from those that may remain if, after a GC run, the instrument has been shut down prematurely. Finally, in the latest version of E²M software, the libraries selected for a each analysis are now visible on the compound search buttons.

The software tools are compatible with standard WINDOWS systems and standard PC's. The data transfer is provided by an Ethernet-100 interface.

# E²M:
# Superior Flexibility

Offering superior configuration flexibility, the Bruker E²M is designed to meet multiple application requirements thanks to the provision of two styles of GC interfaces. A flexible sampling probe and a choice of two self-contained GC modules can be selected either at the time of purchase, or readily added later.

The heated, mechanically flexible air/surface probe, as its name implies, is especially suited for direct measurements that include the sampling of ambient air, or pollution emissions. It is also ideal for applications that involve the determination of contaminants on surfaces. Examples of surfaces to which this probe can be applied include sand, soil, tile and concrete. Connecting the probe is straightforward; it takes less than a minute for an operator to install this option.

Conventional, self-contained GC modules are available and each comprises a sample inlet port, a temperature-programmed oven and a capillary column. The length of the capillary and the stationary phase is specified according to the types of samples being analysed. As with the air/surface probe, the installation is easy and it takes less than a minute for an operator to install this option.

When any of the GC modules are installed, the operator can choose from three sample introduction options. A conventional injection kit allows liquid samples to be introduced through the septum using a microlitre syringe. For semi-volatile organic compounds, where samples have been collected using adsorbent tubes (e.g. Tenax™ tubes), a thermal desorber system can be substituted rapidly for the conventional injection kit. This same thermal desorber component can be used for measurements where gaseous or liquid compounds have been adsorbed onto SPME (Solid Phase Micro Extraction) fibres.

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# Global Resources – Local Focus

Bruker has support centres of technical expertise in every major area of the world providing sales, applications and engineering support for our complete product range. With more than 6,000 employees at 90 locations worldwide you can be confident that the support team fronts a uniquely integrated global resource. Research and development specialists, applications professionals and highly trained engineers in every field are dedicated to your investment in our equipment.

### Superior Detector Performance
For highly sensitive detection, identification and quantification of chemical, biological, explosive and radiation threats. Superior performance and high reliability comes as standard.

### Applications Support
Systems are configured to meet your needs and result from our detailed evaluation of your requirements.

### Standards & Compliance
All our systems are manufactured in ISO9001 compliant factories; so you can be assured of superior quality and performance.

### Software & Data Systems
Designed to industry standards on the Microsoft® platform, our software can be integrated with your security managementnsoftware.

### Training
User Training and User-Level Maintenance is part of our standard Scope of Supply. Our goal is simple; to minimise your cost of ownership.

### Low Maintenance
All our systems are designed for extended maintenance periods and reduce the through-life-costs of your investment.



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