

SEADM

VAPOR ANALYSIS SYSTEM

Advanced measurement through triple filtration
Volatility- Mobility -Molecular Mass

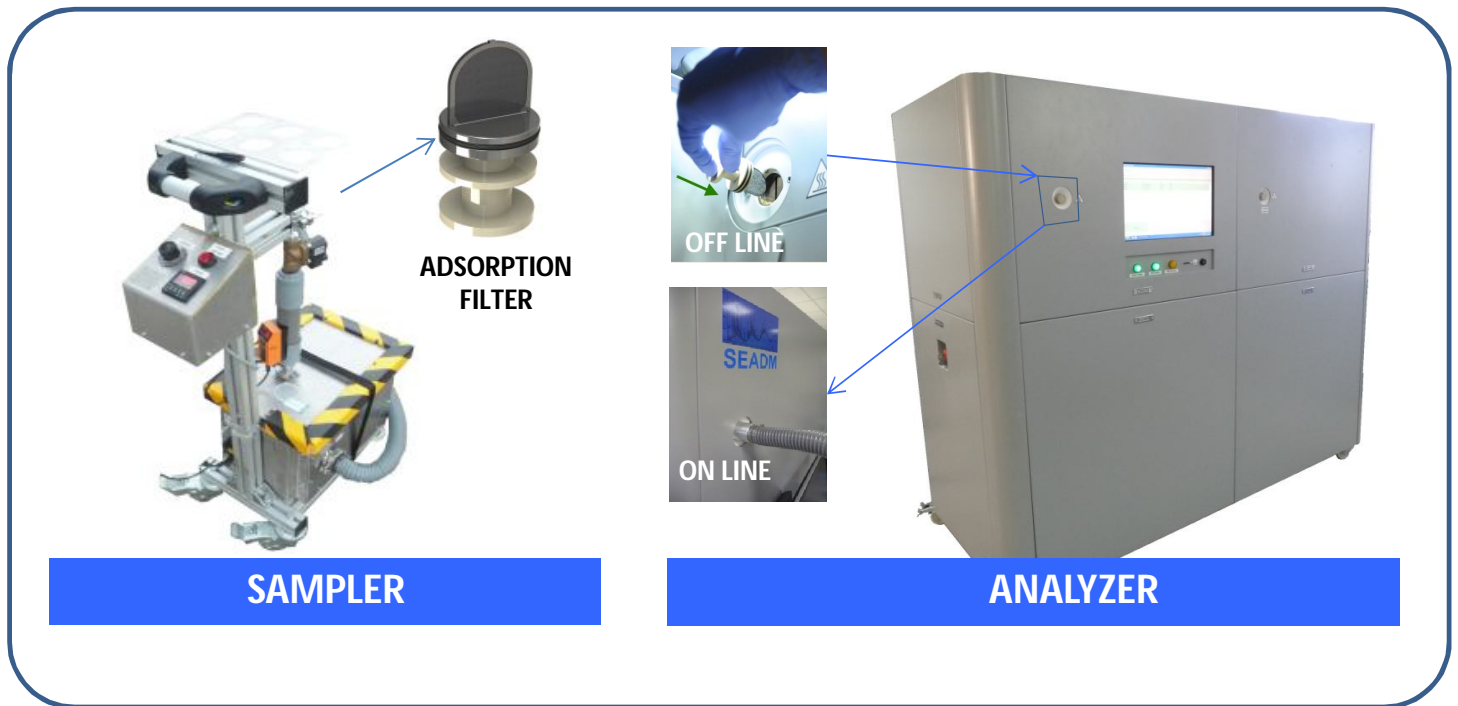


Superior Sensitivity and Selectivity
Vapor Analysis in Real Time

Vapor Analysis System

SEADM's Vapor Analysis System enables the analysis of complex gas samples at levels as low as 10 fg (mass) and 0.01 parts per quadrillion (10⁻¹⁷ atm) (concentration)

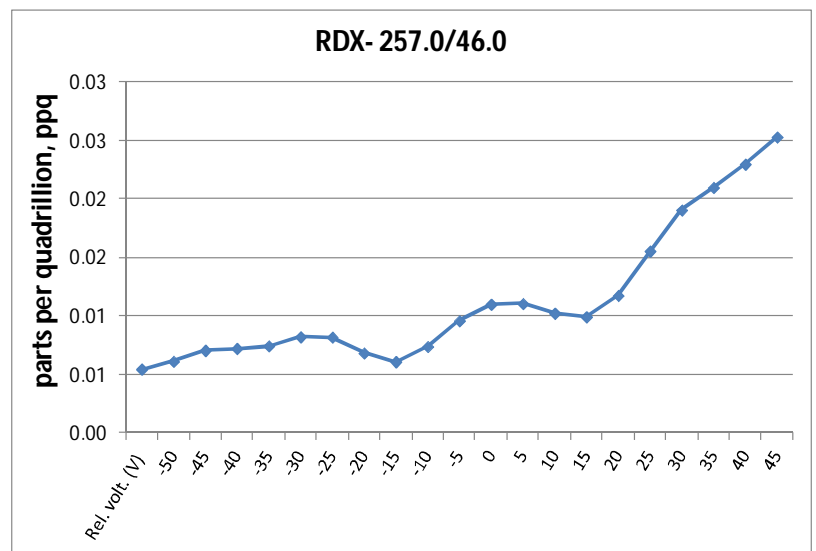
The system has been developed specifically for the vapor analysis research community, in search for excellence. It is built from a light, portable Sampler and an Analyzer for laboratory use.



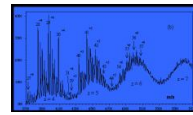
The system can be used in two modes: off-line (sample taken away from the analyzer) or on-line (sample taken from the laboratory).

For the off-line operation, the High Volume Sampler (HVS) allows vapor collection separation from analysis. It delivers an initial filtration stage through filter coating selection, along with concentration. The filter is taken to the laboratory and inserted in the Analyzer, which is built from: (i) a variable temperature thermal desorber acting as a second filter, since it releases vapors according to their volatility (only for off-line operation); (ii) a Differential Mobility Analyzer which acts as a third filter separating ions according to their electrical mobility, and (iii) an MS/MS which implements two additional filtering stages according to the mass of the ion and its characteristic fragments. The System incorporates a powerful Mobility Spectra Processor (MSP), which radically improves mobility filtering performances.

For each selected MS configuration, a mobility spectrum is generated. Results are available through the software interface from seconds to minutes depending on the application.

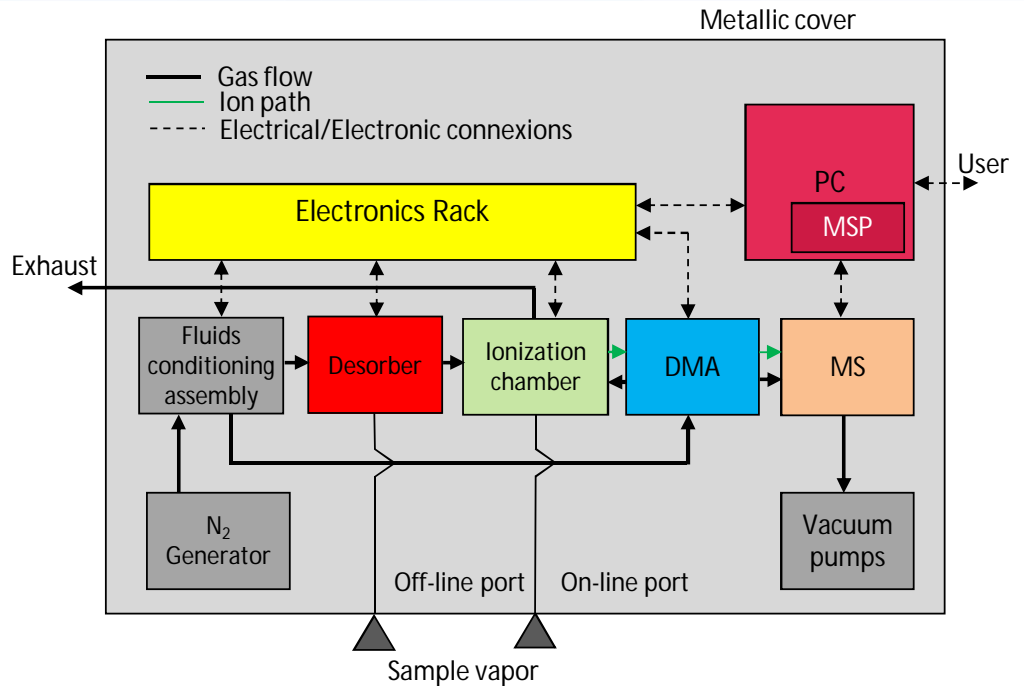


Mobility spectra of RDX vapors. The RDX signal, at 0V, is separated from an interferent at +40V. Note that peak value is about 0.01 ppq



Architecture

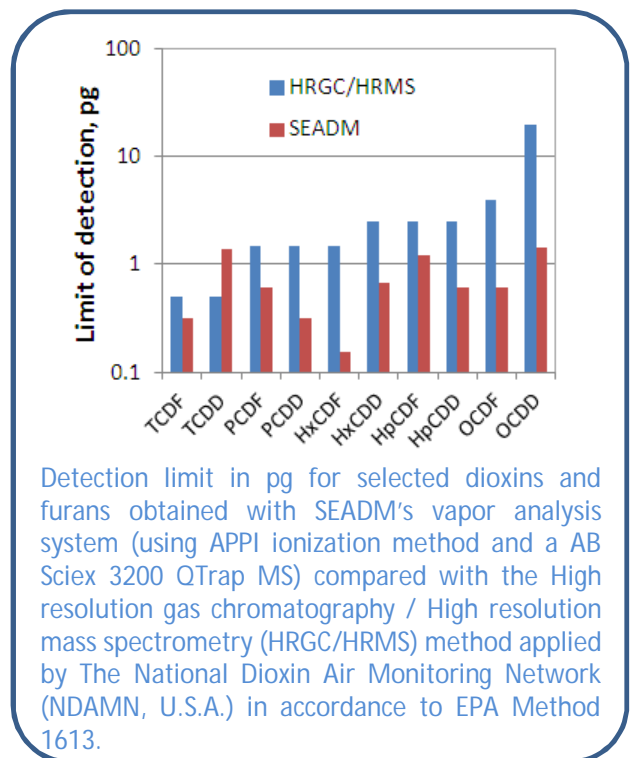
SEADM Analyzer was designed and developed to ensure optimum performance under most stringent conditions. Its highly modular architecture enables to choose the right module configuration for each application.

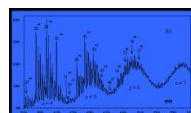


Ionization chamber	Low Flow SESI (LFSESI) , for ultra-high sensitivity applications.
Differential mobility analyzer (DMA)	Planar, supercritical type.
Mass spectrometer	A range of SoTA equipments are available (see specification sheet for details).
Electronics and controls	The control Rack is controlled by the operator's software. It fixes the HVDC references for the DMA and the ionization chamber. It accurately controls the temperature of the key elements (DMA recirculation circuit, desorber, transfer line, ionization chamber), and provides the necessary flows at a controlled pressure for stable operation.
Signal processing software	Mobility spectra processor, MSP unit

Advantages

- Lowest limits of detection available (examples: 0.01 ppq for RDX; < 0.1ppq for TNT)
- Optimum performance for continuous monitoring (process assessment, pollution control, etc.)
- Once an analysis method has been developed, semi-automatic operation can be implemented
- Reduced sampling time due to the very high sensitivity of the Analyzer
- Measurements are done in real time (seconds to minutes depending on the application)
- Complex samples can be thoroughly analyzed (including discovery mode) through a 2D mass-mobility analysis





The unbeatable performance of SEADM's system allows you to optimize your research in vapor analysis



Developed in collaboration with Juan Fernandez de la Mora at Yale University

Specifications and performance

Ionization rate	Up to 1% (LFSESI)
Variable thermal desorber	Improvement of signal-to-noise ratio by a factor of 10
DMA	Resolution: 50 (FR/FWMH)* Transmission: 50% Dynamic range: 20,000
Mobility spectra processor	Improvement of signal-to-noise ratio by a factor of 10
MS available	Shimadzu LCMS 2010, Bruker Impact HD, ABSciex TOF Qstar, ABSciex Qtrap 3200, 4500 & 5500 and ABSciex Triple Quad 5000 & 5500. If your favourite MS is not on the list we will carry out the integration study for you.
Limit of detection	0.01 ppq (for RDX)
Operational time	Real time for most applications (2 min. max)
Power	3-phase, 400 V, 16 A (per line)
Dimensions (mm)	2110 (L) x 905 (W) x 1860 (H). A smaller version is available specifically for environmental applications.
Weight (Kg)	600 Kg

*FR= full range; FWMH=Full width of peak at medium height

SEADM, your strategic partner

SEADM is prepared to cooperate with you in order to help you reach your targets. Please contact us at:

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