CMS5000
VOC Monitor for Water Analysis

Know Your Water™

INFICON

The ultimate water protection

Clean water is essential for life. As more chemicals are introduced into the environment, adverse consequences to water quality and corresponding health impacts will increase as well. In order to provide the highest level of safety and security, a fast response to water quality issues is necessary.

CMS5000 provides autonomous, continuous, reliable volatile organic compound (VOC) data and automatically alerts users if contaminants exceed acceptable thresholds.

CONTINUOUS, UNATTENDED ON-LINE MONITORING

CMS5000 is an online purge and trap GC system designed for years of reliable operation. The unit is pre-loaded with default methods, or a custom method can be created to suit specific requirements.

ADVANTAGES AT A GLANCE

- Saves labor and money with autonomous testing
- Reduces frequency of regular outside lab testing
- Lowest cost of ownership
- Less wasted time with limited maintenance and no sample prep
- Maintains sample integrity by eliminating sample collection and transport
- Easy integration and small footprint
- Analyzes a wide range of US EPA drinking and wastewater method compounds
- Ability to detect VOCs at very low levels (ppt)
- Customized methods to suit your specific needs

CMS5000 requires virtually no operator involvement following initial installation and setup. VOCs and toxic industrial chemicals (TICs) in water are collected onto an internal tri-bed concentrator and analyzed on-site for continuous monitoring, down to part-per-trillion (ppt) levels. The front panel screen displays status in real time and the user can also remotely access the system to view data or control system operation. On-site system integration is managed using wireless communication, Ethernet communication, direct connected Input/Output or Modbus protocol.

MINIMAL MAINTENANCE AND LOW CONSUMABLE COSTS

With CMS5000 less time is wasted as a result of limited maintenance and no sample prep.

Minimal maintenance requirements:

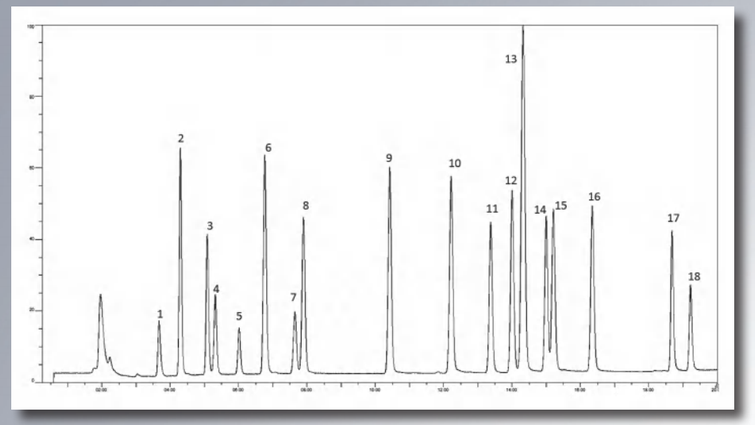
- Rinsing sediment build-up from water collection vessel

Low consumable requirements:

- Argon carrier gas (lifespan: 6–12 months for a 1.6 M cylinder, application dependent)
- Toluene permeation tube (life span: eight years)

ON-BOARD CHECK STANDARD

An onboard toluene permeation tube is used as a check standard to ensure instrument stability during extended periods of operation. The check standard will compensate for normal detector sensitivity fluctuations and changes in system gas flow. Check standard response can serve as an early warning indicator that preventative maintenance is needed.



0.5 ppb nineteen commonly monitored VOCs in drinking water; temperature profile: 60.0°C (hold 1 min) to 90.0°C at 4.0°C/min, to 135.0°C at 6.0°C/min, to 200.0°C at 20°C/min (hold 45 sec)

Column: DB-624, 30 m, 0.32 mm ID, 1.8 µm df

1 methylene chloride
2 trans-1,2-dichloroethene
3 cis-1,2-dichloroethene
4 chloroform
5 1,2-dichloroethane
6 benzene
7 1,2-dichloropropane
8 trichloroethene
9 toluene
10 tetrachloroethene
11 chlorobenzene
12 ethylbenzene
13 m-xylene, p-xylene
14 styrene
15 o-xylene
16 isopropylbenzene
17 1,4-dichlorobenzene
18 1,2-dichlorobenzene

CMS IQ SOFTWARE

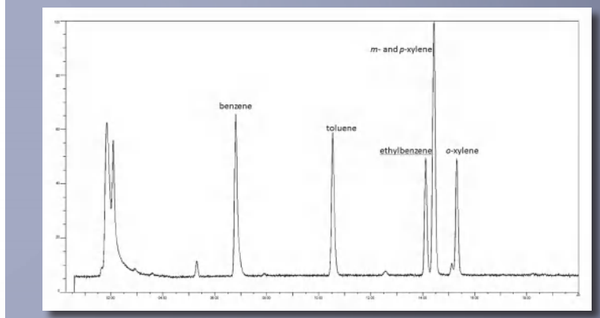
- Analyze chromatograms and export reports to Microsoft® Excel
- Create methods and method sequences
- Create trend reports for monitoring data

PURGE AND TRAP TECHNOLOGY

US EPA-recommended sampling technique for most analyses of VOCs in water

INTEGRATION

CMS5000 can be easily integrated into a centralized system using Modbus Protocol, Input/Output, Ethernet communication, or wireless over TCP/IP



2 ppb BTEX; temperature profile: 60.0°C (hold 5 min) to 100.0°C at 25.0°C/min, to 120.0°C (hold 5 minutes) at 7.0°C/min

Column: DB-1, 30 m , 0.32 mm ID, 4.0 µm df

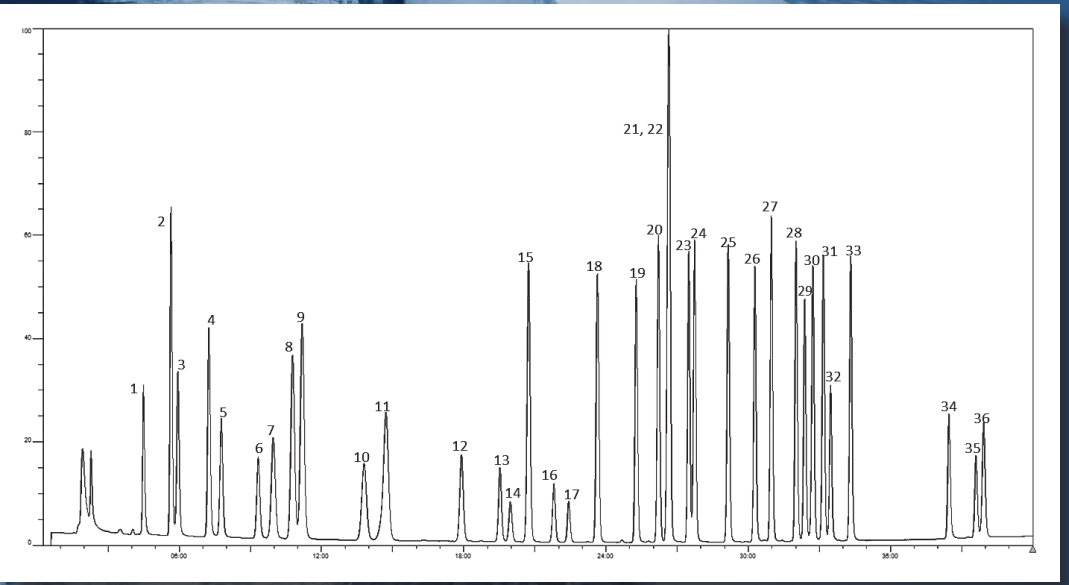
MICRO ARGON IONIZATION DETECTOR (MAID)

Sensitivity to part-per-trillion levels for VOCs at ionization potential ≤ 11.7 eV

APPLICATIONS

- Drinking water VOC monitoring
- Wastewater monitoring
- Water remediation
- Process water quality
- Source water monitoring

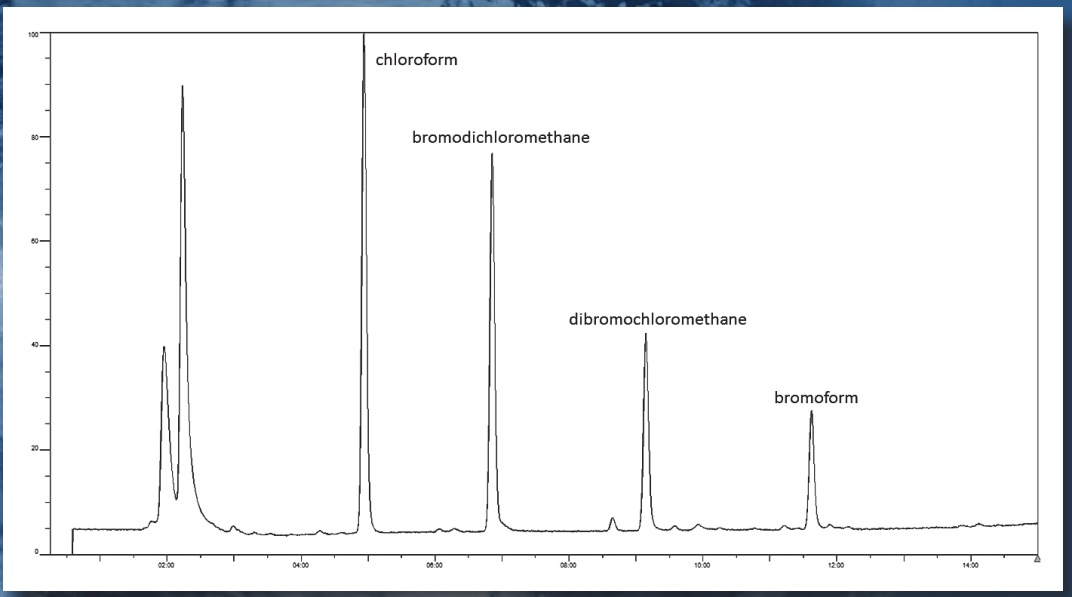
Custom wastewater/disinfectant by-product monitoring methods available



10 ppb thirty-six compounds from US EPA 624.1 Wastewater method; temperature profile: 50.0°C (hold 15 min) to 200.0°C (hold 2 min) at 6.0°C/min

Column: DB-1, 30 m, 0.32 mm ID, 4.0 µm df

1 methylene chloride
2 trans-1,2-dichloroethene
3 1,1-dichloroethane
4 cis-1,2-dichloroethene
5 chloroform
6 1,2-dichloroethane
7 1,1,1-trichloroethane
8 1,1-dichloropropene
9 benzene
10 1,2-dichloropropane
11 trichloroethene
12 cis-1,3-dichloropropene
13 trans-1,3-dichloropropene
14 1,1,2-trichloroethane
15 toluene
16 dibromochloromethane
17 1,2-dibromoethane
18 tetrachloroethene
19 chlorobenzene
20 ethylbenzene
21,22 m-xylene, p-xylene
23 styrene
24 o-xylene
25 isopropylbenzene
26 2-chlorotoluene
27 1,3,5-trimethylbenzene
28 1,2,4-trimethylbenzene
29 1,3-dichlorobenzene
30 sec-butylbenzene
31 p-isopropyltoluene
32 1,2-dichlorobenzene
33 n-butylbenzene
34 1,2,4-trichlorobenzene
35 1,2,3-trichlorobenzene
36 hexachlorobutadiene



10 ppb disinfection byproducts-trihalomethanes (THMs); temperature profile: 55.0°C (hold 5 min) to 120.0°C at 6.0°C/min

Column: DB-1, 30 m, 0.32 mm ID, 4.0 µm df

SPECIFICATIONS

Gas Chromatograph	
GC column	DB-1, 0.32 mm ID, 30 m, 4.0 µm df or equivalent
Valves	Stainless steel body/Teflon diaphragm
Heated zones – maximum temperature	Three independent heated zones: • Column 200°C • Valves 60°C • Detector oven 110°C
Temperature programmable column module	55–200°C
Carrier gas	Argon 99.999% @ 414–689 kPa (60–100 psi)
Variable column pressure control	Regulator pre-set to 90 psi
Sample inlet	Continuous water monitoring SituProbe (dynamic purge and trap)
Concentrator	Tri-Bed
Micro Argon Ionization Detector (MAID)	
Sensitivity	0.5 ppb benzene in water, s/n >200:1; 0.5 ppb MTBE in water, s/n >15:1
Ionization source	Ni-63 2.4 mCi
Repeatability	Five replicates of 1 ppb benzene: RSD calculated <5%
Temperature	110°C (maximum)
Dynamic range	Three decades
Detection limit	ppb to ppt for most analytes
Communication	
Computer/data	Internal Intel® Pentium® processor
Integration	TCP/IP based USB for local diagnostics I/O relay contacts Modbus over TCP/IP
FTP	Configurable for automated data upload
Storage	160 GB (minimum) hard drive
System status	Status table for system operating changes
Data results	Text file with compound retention time, quantitation, time/date for all targeted compounds including method parameters, and system status
Wireless connectivity	802.11 B/G
Touch screen	6.5 in. VGA color display with touchscreen
Physical Operating Requirements	
Size	43 x 83 x 26 cm (16.9 x 32.7 x 10.2 in.)
Weight	25 kg (55.1 lb.)
Power requirement	100–240 V (ac) 200 watts maximum
Temperature	5–45°C
Relative humidity	5–95%
Analysis and Protocols	
Integrated performance standard	Toluene permeation tube for check standard calibration
Detectable compounds	Volatile organic compounds (e.g., halogenated, aliphatic, and aromatic hydrocarbons), IE ≤ 11.7 eV
Acceptance protocol	Initial setup with water purge or custom method
Data analysis	Automatic peak detection and area integration for known compounds

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www.inficon.com reachus@inficon.com