GDA2
Detector químico portátil de amplio espectro

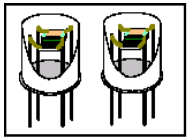
Respuestas in situ

Accidentes en plantas químicas, durante el transporte, fuegos y ataques terroristas (agentes químicos de guerra – CWA)

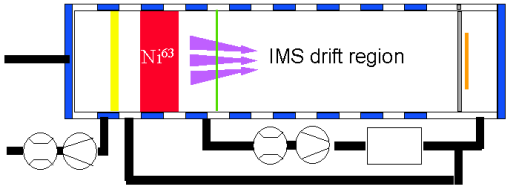
La adecuada evaluación de riesgos requiere instrumentación analítica in situ

GDA: Equipo híbrido multisensor

EC

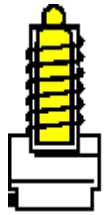


MOS



IMS

Display



PID

Entrada de gas

Diferentes principios de detección en un instrumento portátil

Límites de exposición tolerables

Substance	Concentration limit [ppm]	Sensor type
Acetic acid	20	IMS, SC
Acetone		
Acroleine		
Acrylonitrile		
Ammonia		
Benzene		
Carbon dioxide		
Carbon disulfid		
Carbon monox		
Chlorine		
Chlorobenzene		
Chlorocyane		
Hydrazine		
Ethanol		
Formaldehyde		
Hexane, n-	200	PID, SC
Hydrogen chloride	5	IMS, EC

Substance	Concentration limit [ppm]	Sensor type
Hydrogen cyanide	5	IMS, EC
		S), EC
		S, EC
		S, SC
		IMS
		EC
		EC
		PID, SC
		S, EC
		S, SC
		D, SC
		IMS
		IMS
		IMS
		S, PID
Vinyl chloride	100	PID, SC, EC

Solución para situaciones como:

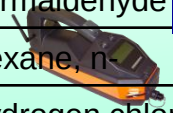
- Muchas y variadas sustancias con diferentes toxicidades
- Muy amplio rango de concentración

  Toluenediisocyanate (TDI) 0.02 ppm

  Acetona (500 ppm):

  Rango dinámico 10^5

  Portátil en mano y medida instantánea



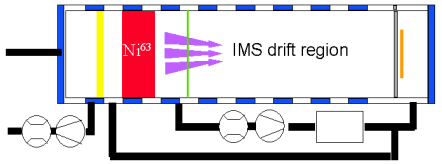
IngenieríaAnalítica
Chromatography & Spectrometry

rtura completa modo multisensor

AIRSENSE
ANALYTICS

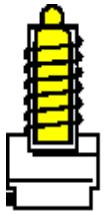
	ETW AEGL3	IMS	PID	EC	MOS
Acetic Acid	20				
Acetone	500				
Acroleine	0,2				
Acrylnitrile	20				
Ammonia	50				
Arsine, ASH3	1				
Benzene	20				
Boron Trichloride	2				
Boron Trifluoride	3				
Carbon Disulfide	10				
Carbon Monoxide	100				
Chlorine	1				
Chlorobenzene	100				
Chlorocyane	0,3				
Diborane	0,1				
1,2- Dimethylhydrazine	0,8				
Epichlorohydrin	16				
Ethanol	3000				
Ethylene Oxide	6,1				
Ethylene Diamine	14				
Formaldehyde	1				
Hexane, n-	200				
Hydrazine	1				
Hydrogen Bromide	3,5				
Hydrogen chloride	5,4				
Hydrogen cyanide	3,5				
Hydrogen fluoride	12				
Hydrogen sulfide	20				
Methanol	720				
Methyl Mercaptane	3				
Nitric Acid	3				
Nitrogen dioxide	8,2				
Phosgene	0,08				
Phosphine	0,5				
Phosporous Trichloride, POCl	0,1				
Styrene	40				
Sulfur dioxide	1				
Sulfuric Acid	3				
Tetrachloroethylene	120				
Toluene	94				
Toluene diisocyanate, TDI	0,02				
Trichloro methane	90				
Trichloroethane, 1,1,1-	380				
Trichloroethane, 1,1,2-	25				
Trichloroethylene	100				
Vinyl chloride	100				

Cobertura completa

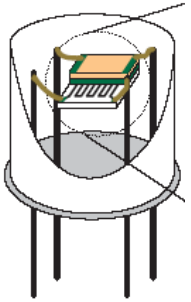


IMS

EC

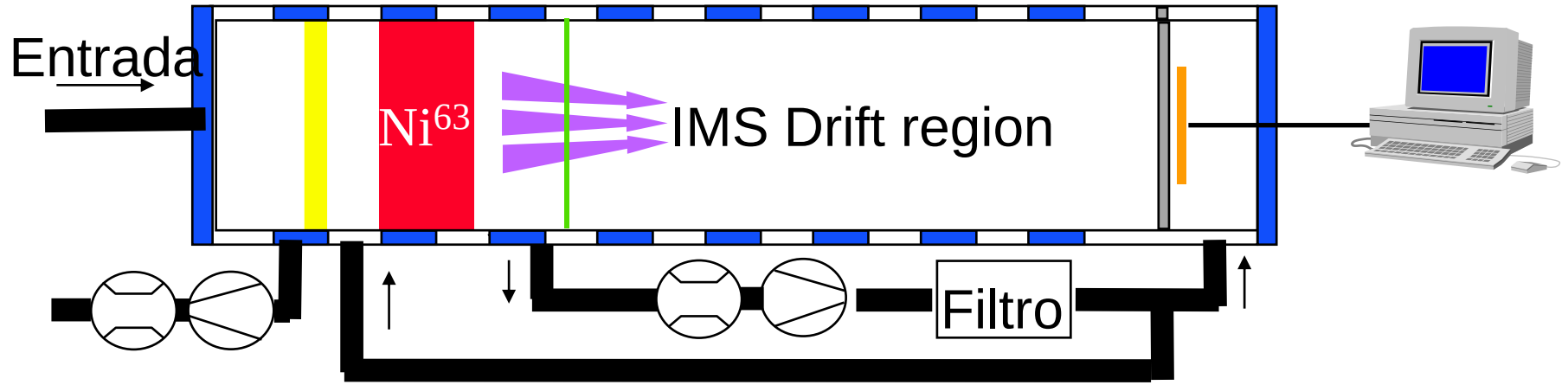


PID



MOS

Espectrómetro de movilidad iónica (IMS)



+ el mejor detector para agentes de guerra químicos

+ altamente sensible

+ altamente selectivo

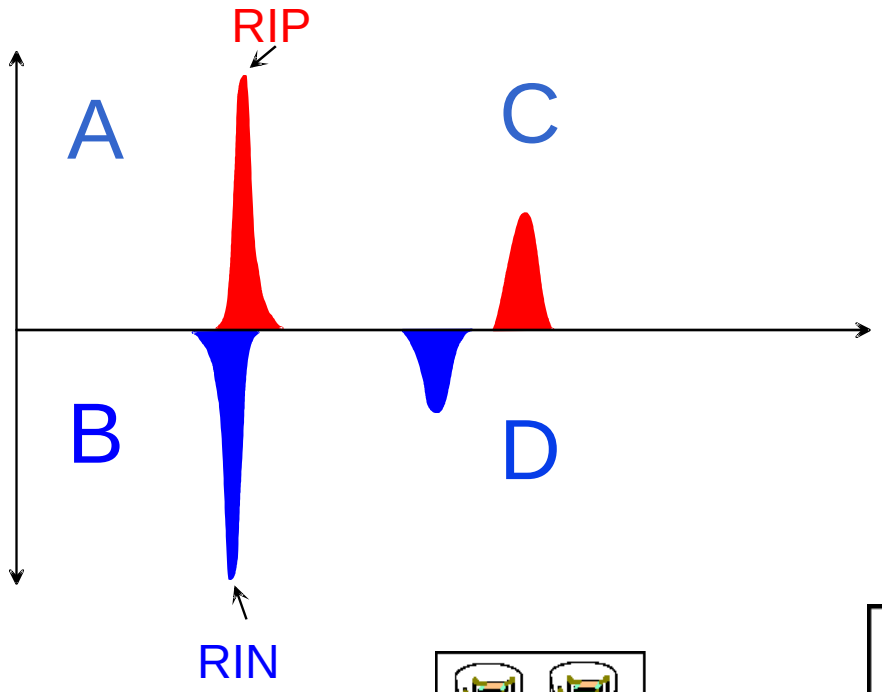
- Señal no adecuada para TICs

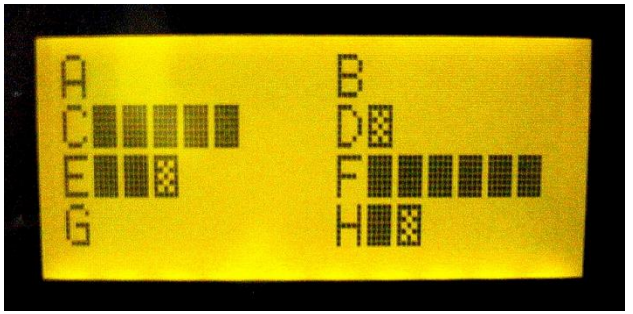
- Sensible a saturaciones y contaminaciones

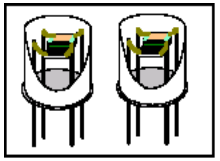
GDA - 8 Canales

Iones positivos

Iones negativos

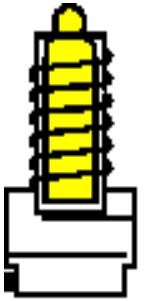






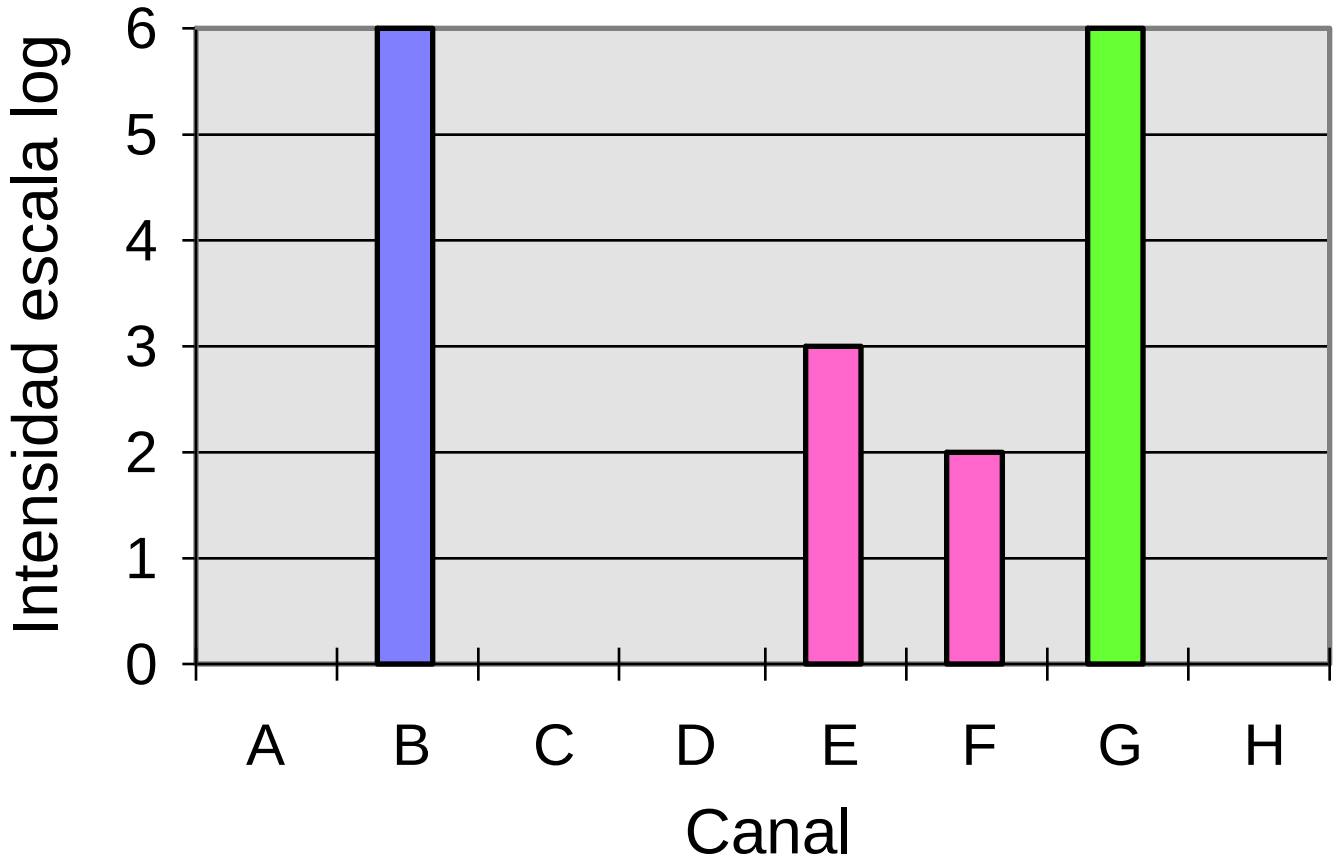
E,F

G



H

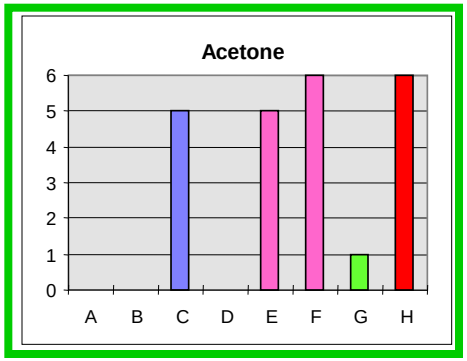
Patrón de identificación

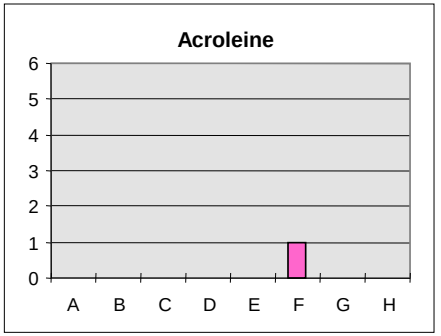


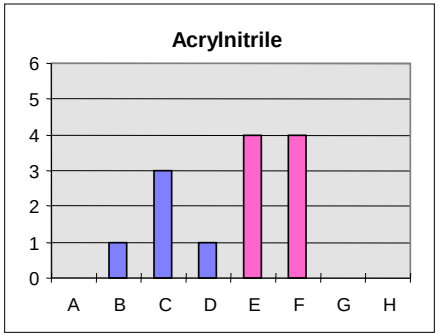
Channel

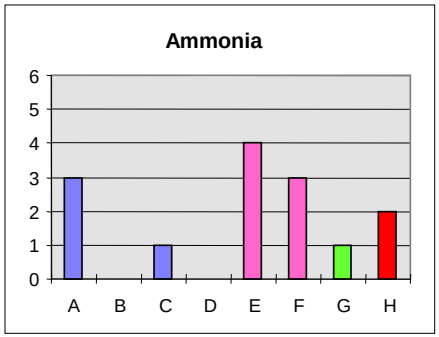
A: IMS before RIP pos.
B: IMS before RIP neg.
C: IMS after RIP pos.
D: IMS after RIP neg.
E: SC-Gas Sensor 1
F: SC-Gas Sensor 2
G: Electrochemical Cell
H: PID

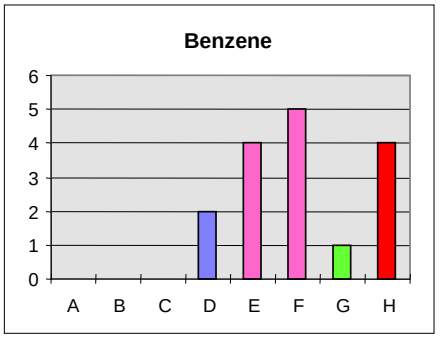
Patrón de identificación

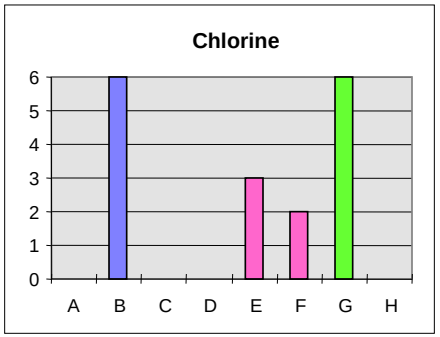


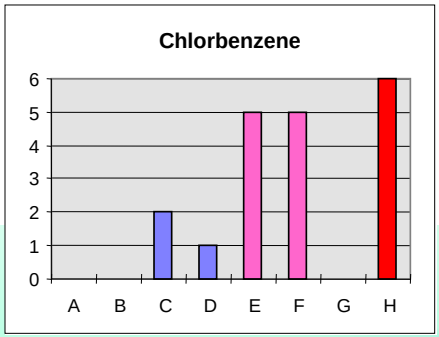


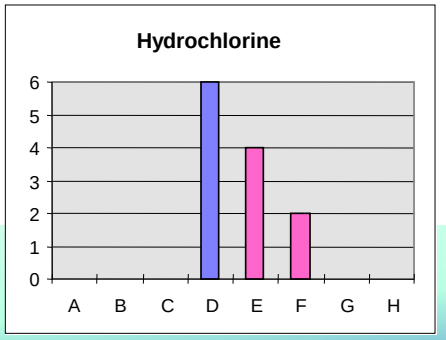


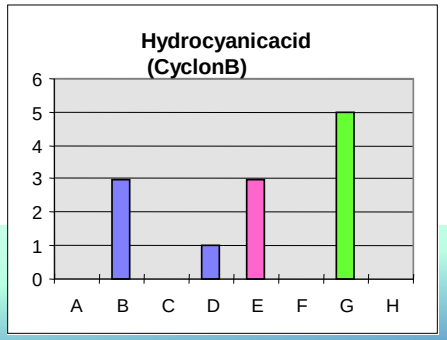




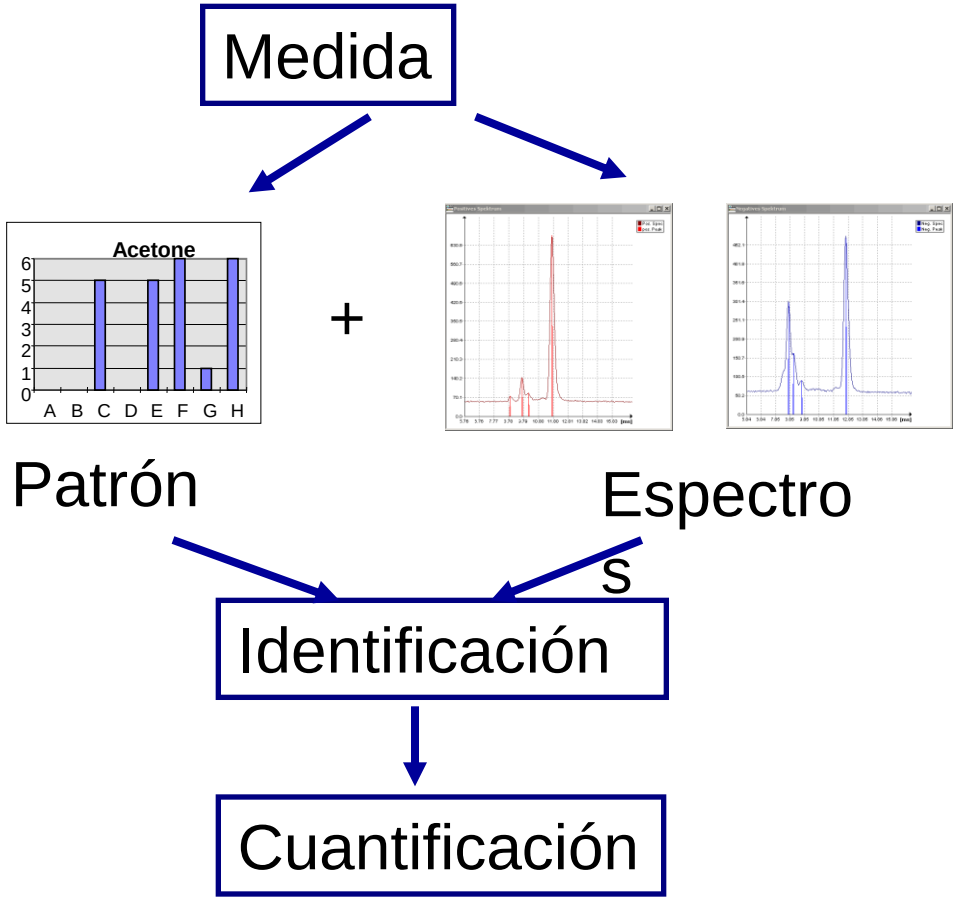


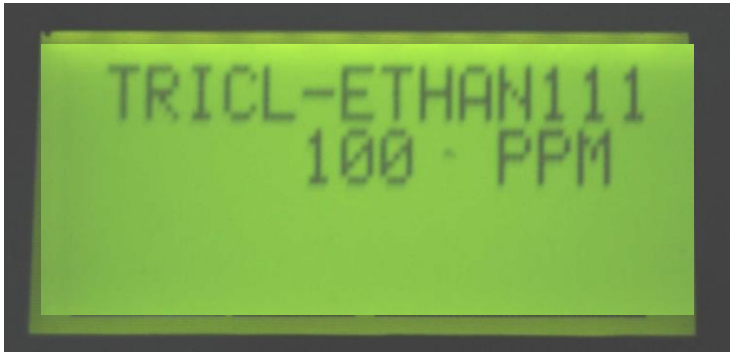






ID basada en librería





Policía, Bomberos, Protección Civil

Laboratorio Policía Criminal LKA (Alemania)

Trento, Italia Dic 2005

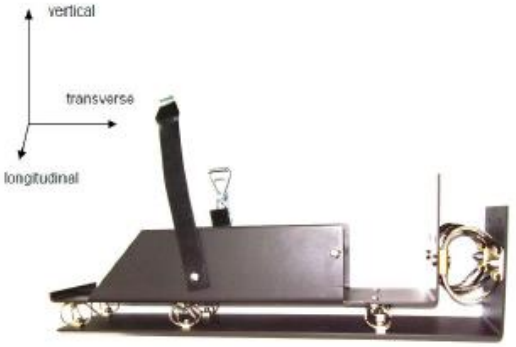
Policía, Bomberos, Protección Civil

Planta de Biogás
Rhadereistedt Nov 05

Liberación de H_2S
en alta concentración

GDA2 para identificación de riesgo químico y seguridad en la zona

Soporte para transporte vehículo



MIL-Spec 810f
aprovado

Seguridad

BM.I REPUBLIK ÖSTERREICH
BUNDESMINISTERIUM FÜR INNERES

Oberst Hermann ZWANZINGER
ABTEILUNG II/2, Ref. II/2/b
MINORITENPLATZ 9
A-1014 WIEN
TEL +43-1 53126-3830
FAX +43-1 53126-3722
Hermann.Zwanzinger@bmi.gv.at

DVR: 0000051
GZ.
Betreff: Gas Detektor Array 2 (GDA 2)

Vienna, 24th May 2006

AIRSENSE Analytics GmbH

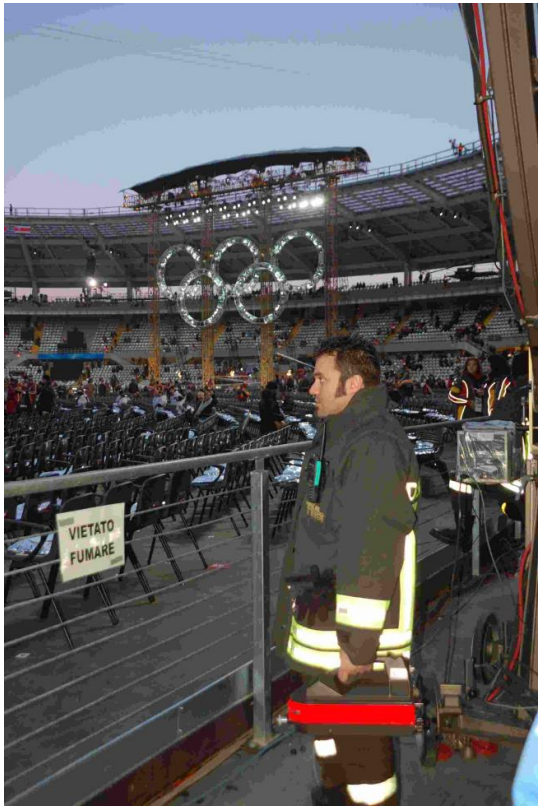
Dear Mr. SCHMIDT,

In answering your request I can confirm that the Austrian Ministry of the Interior is using 2 Gas Detector Array 2 (GDA2) for approx. 4 months. The reason for this purchase from the company AIRSENSE Analytics GmbH was the requirement to provide security for venues and attendees as best as possible, especially during the EU presidency in Austria. Using this technology it should be possible to detect a lot of dangerous hazardous compounds very quickly.

If there is any interest from public agencies how GDA2 works in police practice, I can offer to contact Mr. TIMAL, e-mail: guenter.timal@bmi.gv.at, from the department II/5.

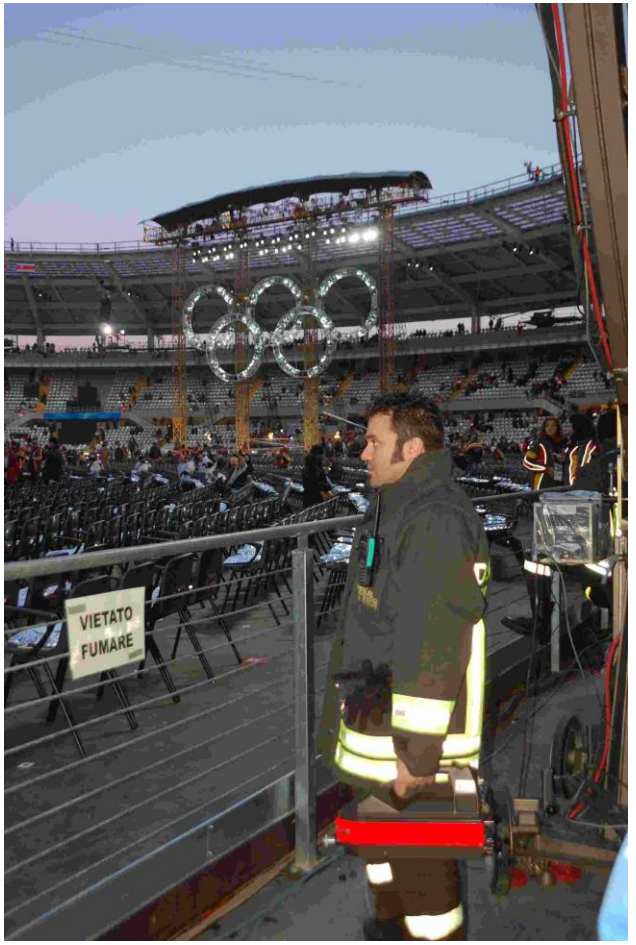
Yours sincerely,

Hermann ZWANZINGER, Col.



Alta Tecnología Analítica

Seguridad eventos públicos y Riesgo Químico



- First Responders – C-Task Force, Vienna, Torino, Roma, Airport Frankfurt
  Industrial Safety Teams, Bosch, BASF, Clariant
  Military Forces, APG (USA), TNO (NL), Lab Spiez (CH), Munster (GER)
  Civil Defense: Minister of Interior Austria, Minister of Interior Italy, DHS (USA), France Le Raid, European Football Championships
- Equipo validado por muchos laboratorios y usuarios

BASF, Ludwigshafen

Referencias:

Bosch

Siegfried

Hoffmann La Roche

Infraserv / Hoechst

Clariant

Report on experience with the Airsense "Gas Detector Array GDA 2"

Task

Procurement of a measuring instrument capable of determining any hazardous chemical substances in the air quickly.

Aduanas - Plaguicidas

Hydrogene Cyanide
Phosphine
Methyl Bromide
Chloropicrine
Trichloro nitro methane
Ethylene Oxide
Formaldehyde
1,2-Dichloro ethane
Carbon Disulfide
Benzene
Sulfuryl Fluoride
...

Hauptzollamt Hamburg – Hafen
– Der Vorsteher –
GZ P 1119 B - A 9
(bei Antwort bitte angeben)

BEARBEITET VON ZOI Riemann
TEL (040) 7 80 85 - 174 oder -0
E-MAIL holger.riemann@hzahh-hafen.bfinv.de
DATUM 29. Februar 2008

AIRSENSE Analytics GmbH
Attn: Mr. Mario Schmidt

Report about the results by using a GDA II
Protection for Customs Authorities against harmful components in containers
Attachments: Table shows performed measurements in different containers

Dear Mr. Schmidt,

After testing a GDA II for 1 1/2 year at the Customs in Hamburg Waltershof a new GDA II system was bought in January 2008. The GDA II is used to provide safety for the customs authorities against harmful components in containers before entering them. Until February 26th 2008 150 containers have been measured before entered by the customs authorities. Measurements are performed from outside the container by using a sampling tube made from steel which is connected to the GDA II gas inlet and entered between the container doors. The instrument displays the results which can be noticed by the customs officer im-

Comparación con GC/MS

Compuesto	m/z
Metanol CH3OH	32
Amoniaco NH3	18
H2S	34
HCN	28
HCl	36

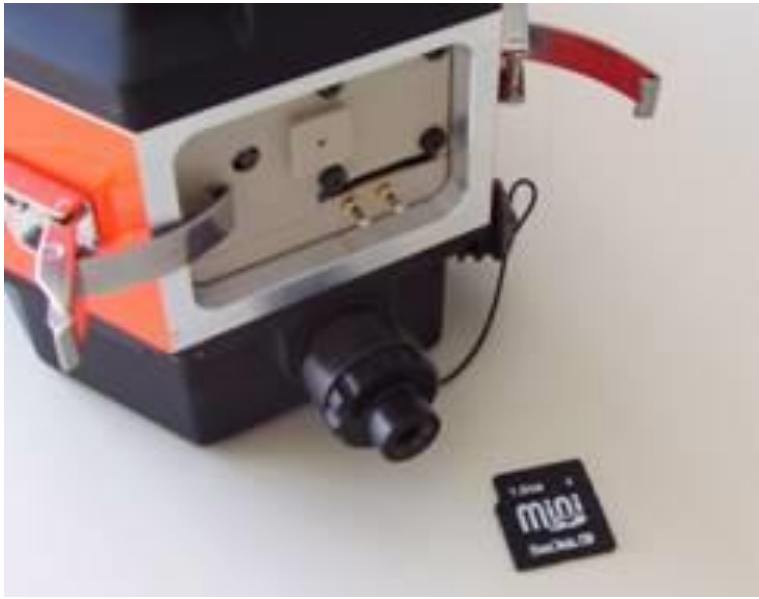
Scans de GC/MS estándar empezando a m/z 45

Una columna de GC para todos los compuestos no es suficiente

Antena inalámbrica

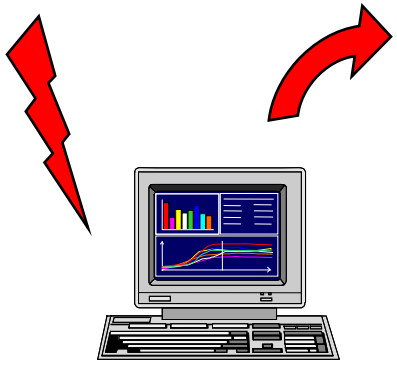
Antena GPS

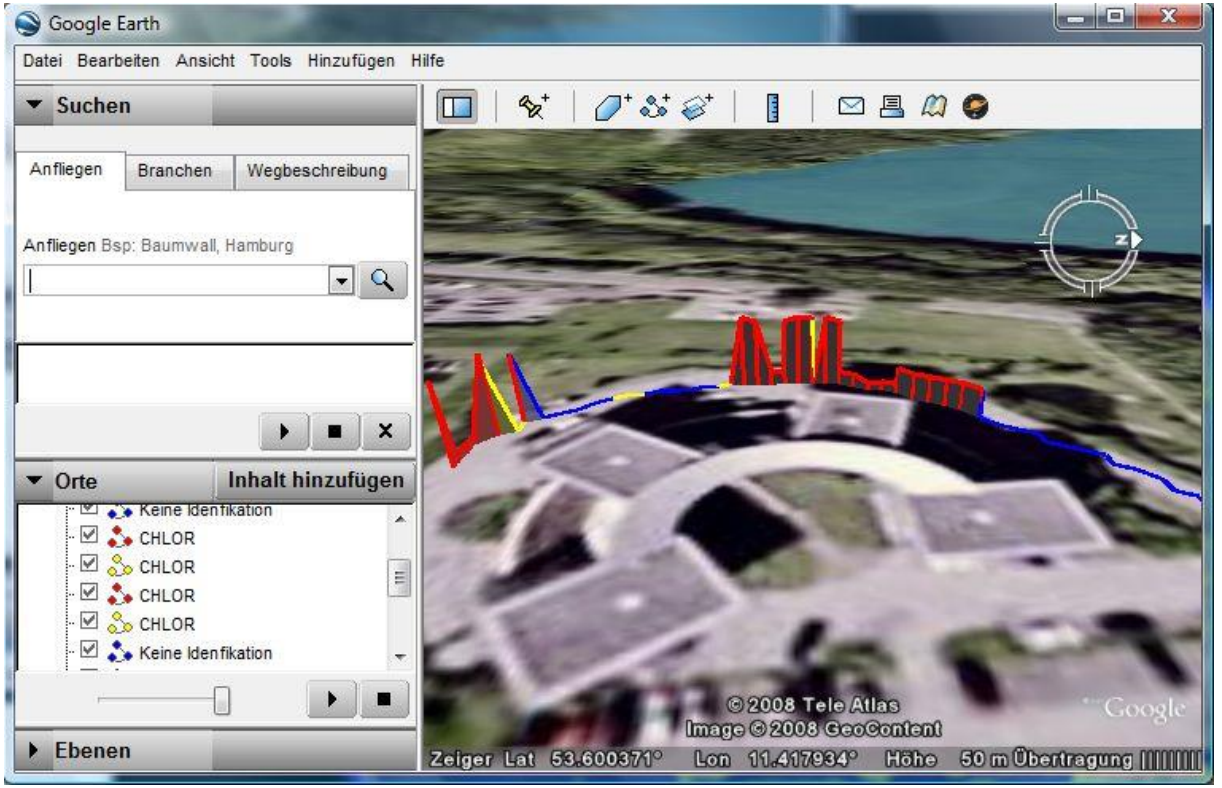
Tarjeta SD para rápida transferencia de resultados



GPS & WLAN

Satelite





GDA2 – Fácil mantenimiento

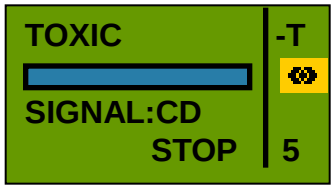
Cambio de filtros

Estación de limpieza

Dispositivo de verificación

Niveles de usuario

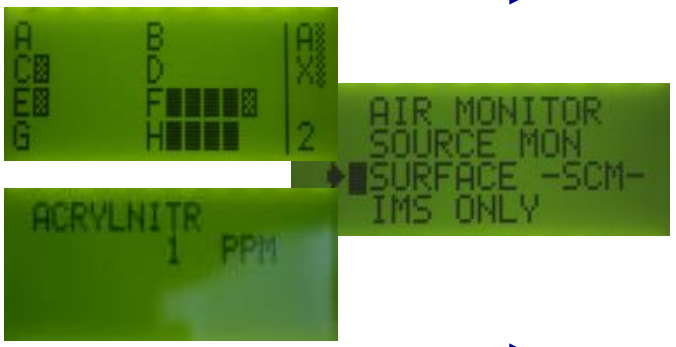
Usuario Nivel 1



1. Puesta en marcha
2. Verificación sensores
3. Monitoreo de aire

Usuario Nivel 2

Contraseña

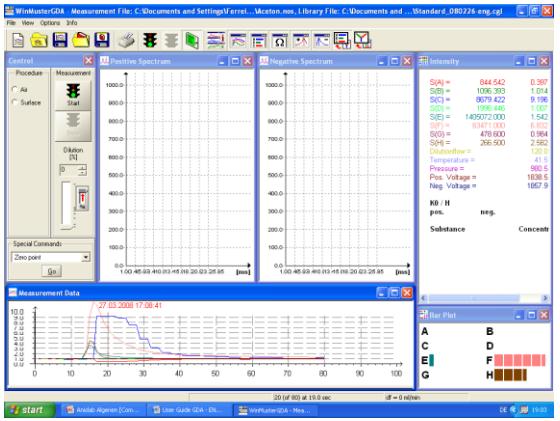


4. Identificación de fuentes
5. Análisis de superficies
6. Cuantificación
7. Autocalibración
8. Software & Almacenamiento

Usuario Nivel 3

9. Ajuste de parámetros
10. Gestión librería

GDA-S Estacionario
Vigilancia de edificios



Análisis en continuo: 24 /7
En tiempo real
Calibración automática
Autonomía

Resumen

- **Amplio rango de detección**

  Alta seguridad, agentes de guerra
- **Tiempo de análisis**

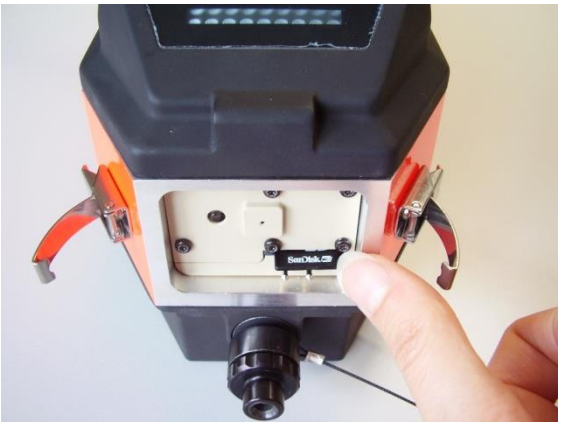
  respuesta en 3 segundos; ID en 8 seg.
- **Alarma e Identificación**
- **Rango dinámico**

  Desde ppb hasta ppm
- **Disponibilidad**

  Auto protección frente a saturaciones, Autolimipeza,
  Estación de limpieza, Soporte para montaje en vehículo
- **Sistema abierto de Librería**

  adaptable a diferentes legislaciones
- **Facilidad de uso**

  Niveles de usuario
- **Data Logger, Wireless, GPS**



IngenieríaAnalítica
Chromatography & Spectrometry

AIRSENSE
ANALYTICS

Gracias por su atención

Más información:

Pruebas en DHS

GDA2 para LACIS Testing Phase II (llevado a cabo en Battelle)

Usado como referncia COTS

AirSense	Hydrogen Cyanide (AC)	Ammonia (NH_3)	Sulfur Dioxide (SO_2)	Cyanogen Chloride (CK)	Phosgene (CG)	Arsine (SA)	Ethylene Oxide (EtO)	Acrolein	Hydrogen Chloride (HCl)	Chlorine (Cl_2)
LOD RT 30%RH	5-AC, 5-FORM	5-NH3	5-SO2	5-CK, 5-AC	5-CG, 5-CL2	5-SA	5-CL2	5-Acrolein	5-HCL	5-CL2, 5-CG
IDLH RT 30%RH	4-AC, 2-CK, 1-NR	5-NH3	5-SO2	3-CK, 3-AC, 2-NR	4-CG, 4-CL2	5-SA	5-ETO	NR (Unit 31030) / NR (Unit 31022) / AFTER DEVELOPER CHANGE - 5-Acrolein, 2-EP	5-HCL	5-CL2, 5-CG
IDLH RT 75%RH	1-AC, 1-Acrolein, 1-CK, 3-NR	5-NH3	5-SO2	5-CK, 5-AC, 2-CG	5-CG, 5-CL2	5-SA	Unknown HC	NR		2-CL2, 2-CG, 3-NR
IDLH CT (10C) 30%RH	1-AC, 1-CK, 1-NH3, 3-NR	5-NH3	5-SO2	5-CK, 1-AC, 4-CG	5-CG, 5-CL2, 4-FORM	5-SA	Cleaning Mode	NR	5-HCL	4-Cl2, 4-CG, 1-NR
IDLH HT (38C) 30%RH	5-AC	5-NH3	4-SO2, 1-NR	5-CK, 5-CG	5-CG, 5-CL2	5-SA	Unknown HC	3-Unknown HC, 2-NR	5-HCL	5-CL2, 5-CG
IDLH RT 30%RH Diesel Exhaust 0.1%	5-AC, 2-CK	5-NH3	5-SO2	5-CK, 2-AC, 3-CG	5-CG, 5-CL2	5-SA	5-ETO	5-Acrolein	5-HCL	5-CL2, 5-CG
IDLH RT 30%RH Diesel Exhaust 1%	5-AC, 3-CK, 2-FORM	4-NH3, 1-NR	5-SO2	5-CK, 5-CG	5-CG, 5-CL2	5-SA	5-ETO	5-Acrolein	5-HCL	5-CL2, 5-CG