

LW Infrared Hyperspectral Imaging Device

Real-time monitoring
over a large area
of multiple hazardous gas clouds

Physical Characteristics:

SENSOR HEAD
Weight : 15 kg
Power supply via the computer
Interface mountable on a tripod

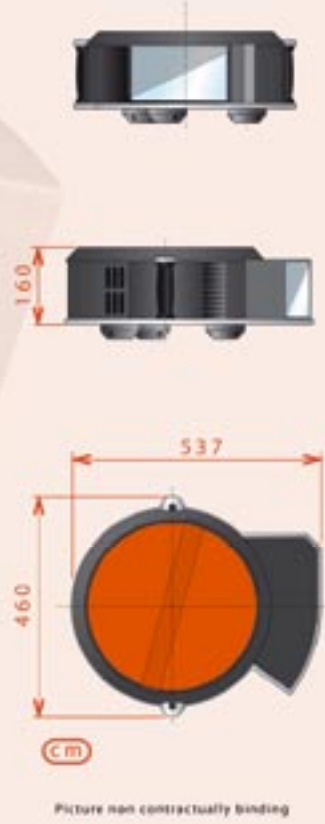
ELECTRONIC UNIT
Weight : 10 kg
Power supply : 230V/110V AC
Consumption : 300W
Optional power supply : 24/12V DC
Transportable (case included)
Integration in vehicle optional

Specifications :

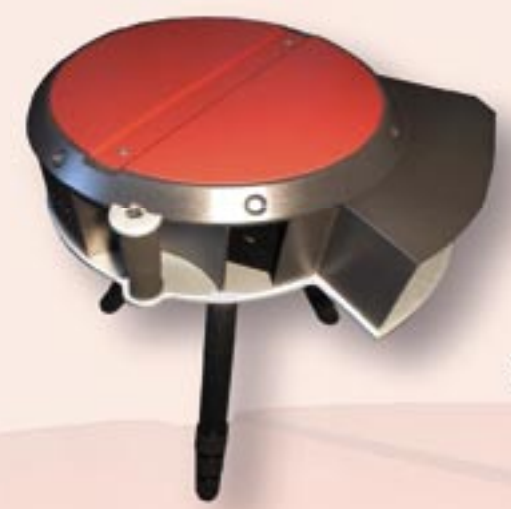
Identification of gases by spectral recognition
Display of the type of gas by colour encoding
Display of the concentration by colour shading
Real time video IR images
Mapping of the gas clouds over the field viewed
Field of view from 10 to 40° (ifov=0,04°)
Maximum detection distance : 3Km
Spectral range : 8-12 microns
Spectral resolution up to 30 nm/3 cm-1
Gas map rate : 4 seconds
Uncooled IR bolometer array : 320x240 pixels
Alarm on concentration thresholds
External alarms
Working starting time : < 1 minute (after temperature stabilization)
Running temperature : +5 to 40°C

Maintenance :

An annual verification with a control calibration is recommended
The processing unit elements are composed of standard PCI cards
The use of an uncooled IR array allows a long life span without any maintenance
The IR window can be changed without any special tools
The IR window is protected when the device is not in operation
Factory return for hardware maintenance
A 1 year factory warranty



Picture non contractually binding



A low-cost chemical agent cloud remote sensor employing innovative technology based on a new concept of imaging spectrometry, using an uncooled infrared 320x240 bolometer array as a sensor, sensitive in the 8-12 µm range

SURVEY :

- Industrial chemical agent releases
- Military & civilian security
- Chemical terrorist threats
- Environmental protection



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> CRISIS MANAGEMENT for firemen, civilian protection

> RISK EVALUATION and selection of adhoc protection means
ventilation, gas masks, individual protection in hazardous industrial areas

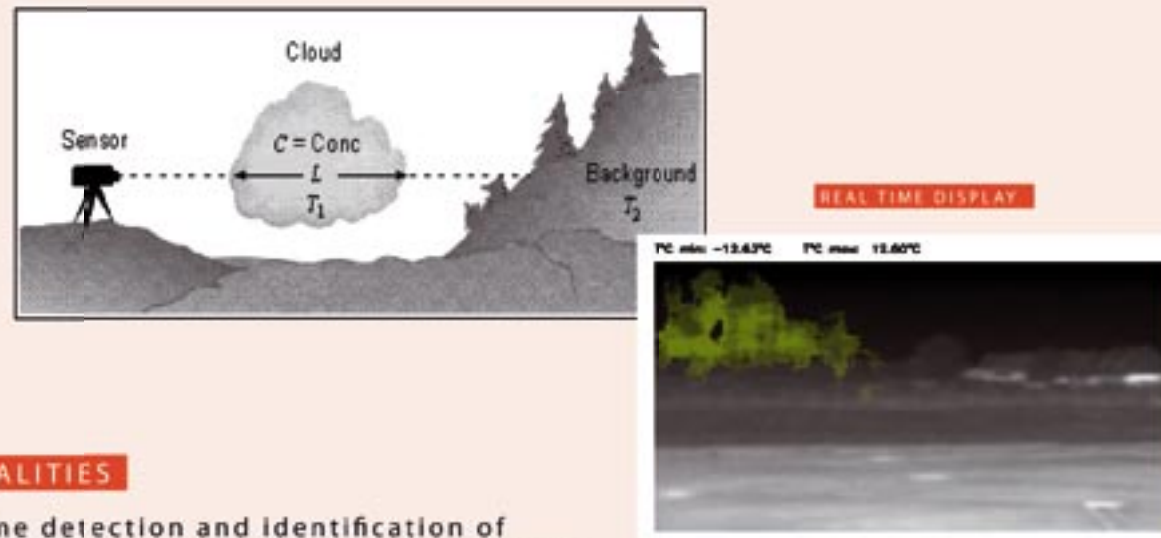
> GLOBAL SURVEILLANCE against chemical risks
in industrial areas and for homeland security

SPECIFICATIONS

By providing the end-user with gas plume images in real time, the device allows the remote detection and source location of gas leaks, as well as the continuous monitoring of fugitive gas emissions in the atmosphere.

The characterization of gas dispersion and the simultaneous measurement of path integrated concentrations (in ppm.meter) allows a more realistic appreciation of current 3D dispersion models.

This system, compared to existing ones, is rendered attractive by its simplicity and high performance in remote detection and monitoring of gas plumes for industrial, civilian and military applications.



FUNCTIONALITIES

- > Real-time detection and identification of multiple gases using their spectral signatures
- > Measures the concentration over an integrated path length
- > Allows the operator to choose the gases to be detected from a predefined list
- > Shows the infrared image with colour overlapping of the gas(es) detected
- > Gives relative information on the gas concentration using colour shading
- > Automatically generates alarms on gas detections
- > Alerts the remote control center or the operator via network or by phone



ARCHITECTURE

The system is made up of 2 units : the sensor head and the electronic unit

- The electronic unit includes :
 - > the acquisition card
 - > the motorization control unit
 - > a flat screen or a laptop for MMI

External alarms can be controlled

All software can be upgraded by CD-Rom or Internet upload

Specific MMI can be developed to meet special customer needs



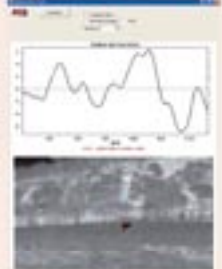
Flying applications



SYSTEM PERFORMANCES

- > Multi-agent scanning
- > Cloud localisation and real time tracking directly on landscape image
- > 1 concentration map every 4 seconds
- > Cloud size as low as 10 pixels
- > Spectral resolution from 30 nm (3 cm⁻¹) to 160 nm (16 cm⁻¹) in the range 8-12 μm
- > Portable and airborne device under development
- > Potential biological agent detection
- > Outdoor and enclosed areas capability (subway, tunnels, large public events, buildings,...)

ANALYSIS TOOLS



Search for gas leaks in a chemical plant



Powerplant emission survey

ATIS VERSUS ITS COMPETITORS

> EXISTING SYSTEMS' LIMITATIONS

- Spot sensor measurement:
 - Restricted measurement
 - Multiple implementation required for premises surveillance
 - High cost for high precision captures
- Laser remote measurement:
 - Eye-safety problems
 - Measurement along one path only
 - Often dedicated to only one gas
- Optically filtered infrared imaging:
 - Only one gas per filter configuration
 - Low performance in discrimination

> ATIS SOLUTION

- > Remote sensing up to a few kilometers
- > Sensing of large areas, indoors or outdoors
- > Passive infrared imaging
- > Continuous and real-time processing of gas spectrum
- > Ability to monitor several gases simultaneously
- > Low cost maintenance