DR1000

SCENTROID DR1000

Flying Laboratory

The Scentroid DR1000 can be used to sample and analyze ambient air at heights of up to 150 meters above ground level that was previously impossible to accomplish. Air quality mapping, model verification, analysis of potentially dangerous sites are all made possible by this novel innovation.

LIVE CHEMICAL MONITORING

The Scentroid DR1000 flying laboratory provides continuous monitoring of multiple chemicals. While in flight, five built-in chemical sensors can provide remote monitoring of chemicals selected at the time of ordering. Chemical monitoring can be provided for H2S, CH4, CO2, SO2, VOCs, and close to 30 other selected chemicals. Chemical readings along with GPS position and altitude can provide 3D mapping of ambient pollution and odour levels. This feature can also be used to guide the operator into a plume for bag sampling. See the table on page 4 for a list of the available sensors.

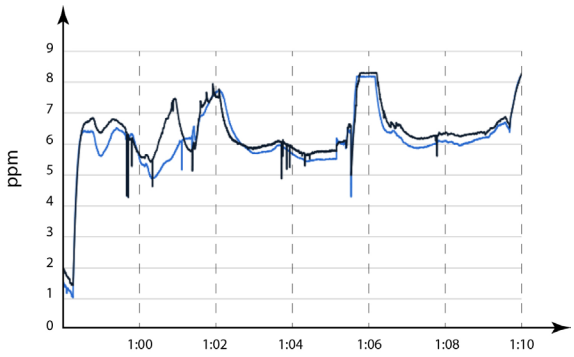
IMPROVES AIR SAMPLING CAPABILITY OVER DIFFICULT TERRAIN AND AT DIFFERENT HEIGHTS

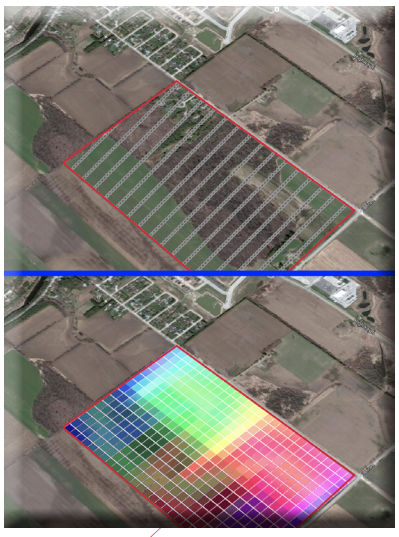
It is often necessary to sample stacks, ponds, and other location where human access is difficult and /or dangerous. Furthermore, operator exposure to dangerous chemicals during sampling must be carefully considered. The Scentroid DR1000 flying laboratory allows the operator to stay safely away from potentially hazardous sources while acquiring the required air sample for laboratory analysis. The sampling drone can also be used to sample ambient air at an elevation of up to 150 meters above ground level that was previously impossible to accomplish.

ENDLESS APLICATIONS

The DR1000 Flying laboratory provides a robust platform to conduct impact assessment and air quality measurement for a wide range of applications including monitoring of:

- Fugitive emission
- Flare emission
- Leak detection along oil pipe lines
- Landfill methane and odour emission
- And much more!





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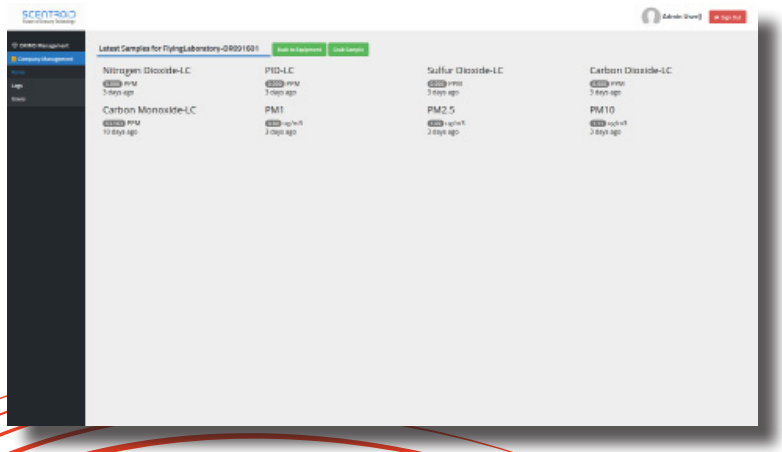
Flying Laboratory

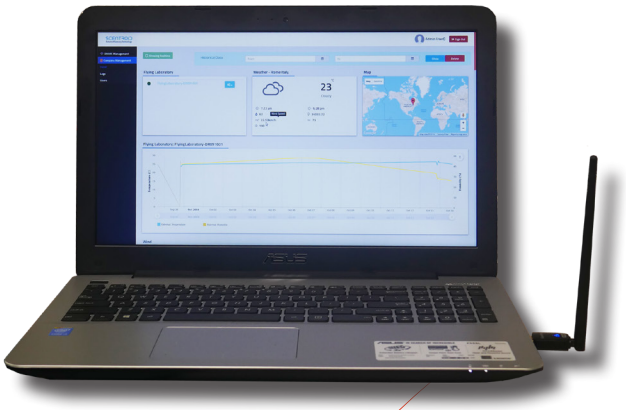
COMMUNICATION

DR1000 will come with simultaneous GPRS and WIFI communication capabilities. The GPRS is used to send data to our new cloud server based Drone Information Management System (DRIMS). The secure online system will allow you to remotely monitor and even control the flying laboratory as well as store and process the data collected. The Drone also connects to the ground station using WIFI communication protocol. Both Ground station and Cloud based servers run DRIMS software and simultaneously can log data from multiple DR1000 drones.



GROUND STATION

The Ground station that is included with every DR1000 Flying Laboratory consist of a specialized laptop with pre-installed Ubuntu and Windows 10 operating systems, high gain powerful WIFI antenna, and DRIMS software. DRIMS (Drone Information Management Software) is provides the user with means to control the flying laboratory and log all acquired data. DRIMS will provide both live data as well as all historical data for all sensors plus GPS position, Altitude, Temperature, and humidity. The user can also command the drone when to take the sample, select the sampling interval, adjust sampling rate, and perform routine maintenance such as calibration of sensors. The laptop will be dual boot and can be used for other work including mapping the data in a GIS software, viewing path on Google Earth, analyzing in Excel, or any other task.



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SPECIFICATIONS

DR1000

FLYING LABORATORY

DR1000

Manufacturer	SCENTROID
Model	Scentroid DR1000 flying laboratory
Maximum operating time with full charge battery	2.5 hours
Time to fill up a sample bag	5 Sec per Liter
Weight	3410 g
Dimension	26cm x 16cm x 18cm

DIRECT FLARE PLUME SAMPLING

The DR1000 can be flown into the plume of a flare to take direct samples for analysis for chemical composition and olfactometery. Temperature and humidity of the plume are also measure to ease dispersion calculation.

DUST MONITORING AND THERMAL IMAGING

The Scentroid DR1000 flying laboratory can also provide continuous monitoring of PM 1, 2.5 and 10 using a laser scattered particulate counter. The dust monitoring can be installed in addition to the 5 chemical sensors for complete ambient air quality assessment.

A thermal imaging camera can also be installed for visual confirmation of fugitive emissions in a variety of applications such as landfills, storage tanks, and oil/gas pipes.

RECOMENDED DRONE

DR1000 can be attached to any Rotary Wing or Fixed Wings drone, recommended drones are DJI S1000 and DJI MATRICE 600.

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AVAILABLE SENSORS

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Sensor ID	Chemical	Range	Lowest Detection	Resolution (ppm)
CD1	Carbon Dioxide - High Concentration	5,000 to 900,000 ppm	5000 ppm	100 ppm
CD2	Carbon Dioxide - Low Concentration	0-5000ppm	0 ppm	15 ppm
CO1	Carbon Monoxide (low Concentration)	500 ppm	15 ppm	5 ppm
CO2	Carbon Monoxide (high concentration)	10000 ppm	250 ppm	20 ppm
C11	Chlorine	20 ppm	200 ppb	20 ppb
E1	Ethylene Oxide	0-100 ppm	1 ppm	0.1 ppm
H1	Hydrogen	0-5000 ppm	1 ppm	0.8 ppm
HCL1	Hydrogen Chloride	100 ppm	0.1 ppm	0.1 ppm
HCY1	Hydrogen Cyanide	100 ppm	0.1 ppm	0.1 ppm
AM1	Ammonia	100 ppm	0 ppm	1 ppm
ON1	Ozone and Nitrogen Dioxide	O3- 20; NO2- 20 ppm	0 ppb	15 ppb
PH1	Phosphine (low Concentration)	10 ppm	0 ppm	30 ppb
PH2	Phosphine (high Concentration)	2000 ppm	5 ppm	2 ppm
HS1	Hydrogen Sulfide (low Concentration - ppb)	1 ppm	3 ppb	1 ppb
HS2	Hydrogen Sulfide (high Concentration - ppm)	2000 ppm	1 ppm	1 ppm
NO1	Nitrogen Oxide	100	0 ppm	0.1 ppm
CH1	Carbon Monoxide and Hydrogen Sulfide	CO 0-1000, H2S 0 - 100 ppm	0 ppm	CO 1, H2S 0.25 ppm
E2	Ethanol	0-500 ppm	0 ppm	1 ppm
MT1	Methane (LEL)	0-100% LEL	0 ppm	1% LEL
NC1	Nitric Oxide (low Concentration)	20 ppm	0 ppm	80 ppb
NC2	Nitric Oxide (High Concentration)	5000 ppm	0 ppm	1 ppm
ND1	Nitrogen Dioxide (Low Concentration)	20 ppm	0 ppm	0.02 ppm
ND2	Nitrogen Dioxide (high Concentration)	200 ppm	0 ppm	0.1 ppm
O1	Oxygen	0-20%	0 ppm	0.10%
O2	Oxygen	0-100%	0 ppm	1%
PD1	Total VOCs (ppb) - PID	50 ppm (isobutylene)	0 ppm	1 (ppb isobutylene)
PD2	Total VOCs (ppm) - PID	300 ppm (isobutylene)	1 ppm	0.1 (ppm isobutylene)
SD1	Sulfur Dioxide (high Concentration)	2000 ppm	0 ppm	2 ppm
SD2	Sulfur Dioxide (low Concentration)	20 ppm	0 ppb	20 ppb
FM1	Formaldehyde	10 ppm	0.01 ppm	0.01 ppm
PM 1-10	Particulate PM 1, 2.5, 10	0-10,000 Particles/Sec	PM 1	N/A

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