SL50
Scentinal
PRODUCT BROCHURE

Letter from Scentroid's CEO

Scentroid's mission is to empower our clients with vast in-depth knowledge, state-of-the-art instruments, and the most extensive customer support. To this end, we strive in every aspect of our operation to put our client first and to use our research expertise to develop the most innovative and effective products and services in the sensory industry. We envision a future where environmental impacts will be easily and accurately measured and mitigated.

Ardevan Bakhtari

Dr. Ardevan Bakhtari
CEO, Scentroid

Why Choose Scentinal?

Scentinal offers a completely customizable solution with many unique features including **self-cleaning, multiple sampling ports, self-configuration capabilities for plug and play installation, time synchronized readings, alarm/notifications, powerful air conditioner and heating systems, solar powered modules, and more.**

With each purchase, you also receive the highest after sales support in the industry, and one of the most comprehensive warranties. Our **2 year complete warranty** even includes sensor replacement – showing how confident we are about our product.

At Scentroid, we pride ourselves on our customer care and after-sales support. We offer on-site training, online training, as well as videos, brochures, operation manuals, and more. With its unparalleled reliability and accuracy, these are just some of the advantages of our Scentinal SL50 unit over other air quality monitoring station.

Please contact us to learn more at
info@scentroid.com OR call us at **+1.416.479.0078**

SL50 Scentinal Overview

Scentinal is a **continuous ambient pollutant and odor emission monitoring system** which operates through high accuracy (ppb level) sensing technology. Scentinal can provide simultaneous monitoring of odorous and non-odorous gases such as Hydrogen Sulfide (H_2S), Sulfur Dioxide (SO_2), Ammonia (NH_3), Methane (CH_4), Carbon Dioxide (CO_2), and many other Volatile Organic Compounds (VOCs).

Scentinal uses **up to 20 sensing modules** ranging from Photo-Ionization Detectors, Non-Dispersive Infrared Detectors, Electro-Chemical Cells, Laser Scattered counters and Metal Oxide sensors. The data collected from sampling is stored locally and is also transmitted to the **cloud server**, providing easy accessibility. The Sensor Information Management System (SIMS3) is used to store and display the results from monitoring and sampling campaigns while also providing capabilities for **remote configuration, calibration, and diagnosis of multiple Scentinal units.**
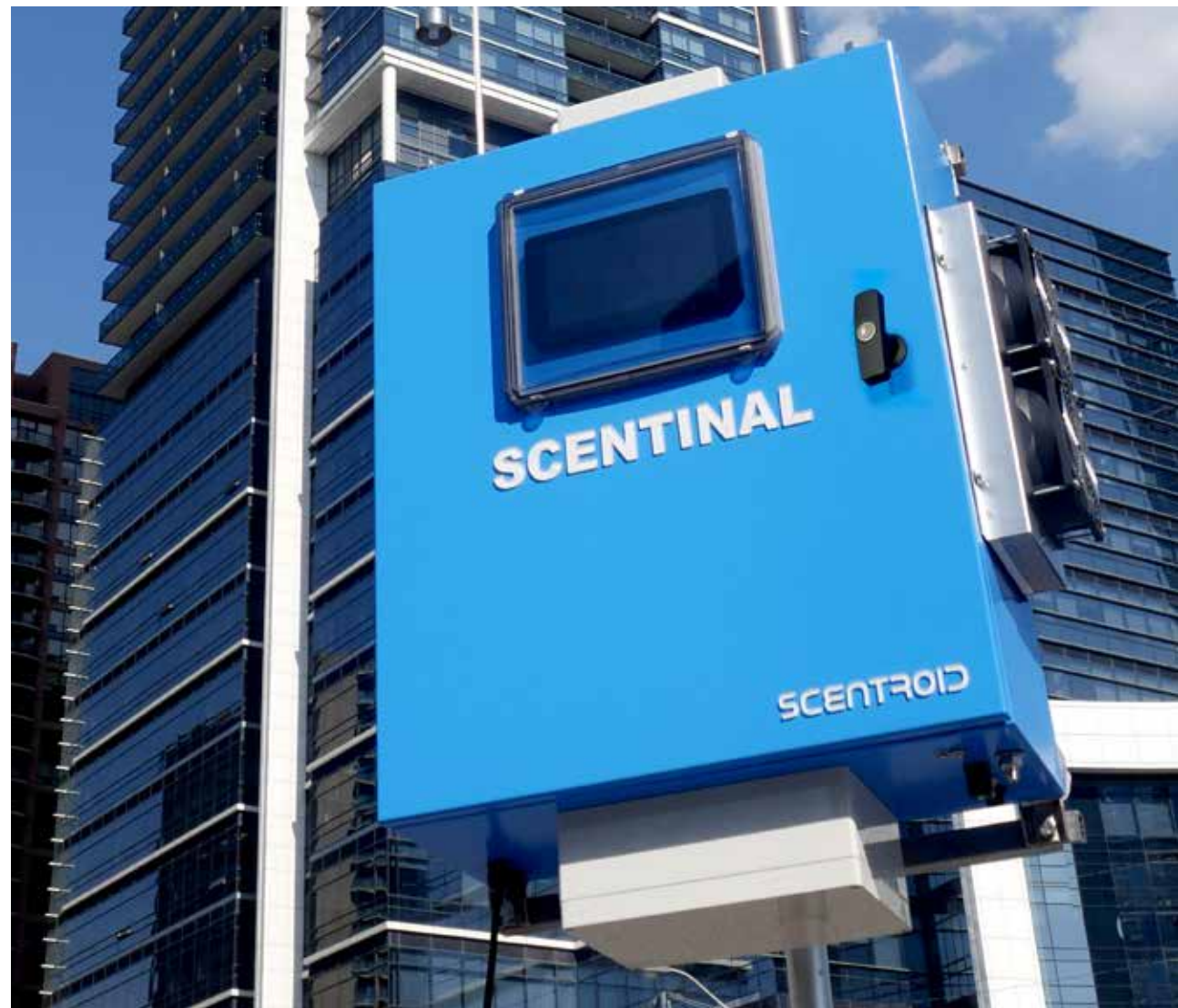
Easy to Use!

Scentinal is easy to setup and use. Each Scentinal comes **preloaded with a SIM card** – all that's left to do is mount the unit to a wall/pole and plug in the power cable. Scentinal will detect its location using its built-in GPS and start transmitting to the central server. All configuration and maintenance can be done on the on-unit 7" touch screen monitor or remotely through the SIMS software (See our SIMS3 section in this brochure for additional information about our software).

The Cost-Effective Solution

At a fraction of the cost of a traditional air quality station, Scentinal can provide **pollutant and odor emission** data that is critical in meeting your environmental objectives. In addition to an affordable purchase price, Scentinal has minimal operating cost. Add that to Scentroid's unparalleled **2-year comprehensive warranty;** which covers all aspects of the instrument (including the sensors), and Scentinal becomes the most affordable solution for continuous airborne pollutant and odor monitoring in the world!

Specifications

Product Name	Scentinal SL50
Maximum # of Sensors	20
Type of Sensors	PID, NDIR, EC, Laser Particulate counter, and MOS
Sampling rate	1 per minute
# Of Sampling Ports	1 to 2
Weight	81 lbs
Size	24'' x 20'' x 8''
Power Requirements	100-240V 50/60Hz 2A
Power Consumption	30W without AC - 150W with AC
Communication	3G/4G (default), LAN (default), WIFI (optional), MODBUS
On-board data Storage	64GB - SD Card
Cloud Server	Included by Default
On-Board Server	Included by Default
User Interface	7" touch screen on Panel door and Remote access Sensor Information Management System
Ambient Temperature Range	0 to 35 ºC without AC system -50 to +50 ºC with Heating and AC system
Sample Conditions	-50 to +50ºC and 10 – 90% RH without predilution system -50 to 120ºC and 0 – 100% RH with pre-dilution system
Calibration	Manual, using calibration gas and on-board screen Optional, automatic calibration using built-in calibration gas
Warranty	24 months full warranty on all parts including sensors
Sensor Replacement Frequency	Sensor dependent – first 2 years covered by warranty
Software	SIMS3 - Sensor Information management System – free access for life of product
Cabinet	NEMA 4X
Mounting Hardware	Wall mounting hardware included

For a full list of sensors, visit us at www.scentroid.com

Scentinal Features

Data Storage Reliability

Scentinal provides **3 levels** of data storage:

1. Storage of data on pre-installed SD card
2. Transmission and storage of data on the on-board server
3. Transmission and storage of data on the cloud / localized server

Scentinal is Also a Server!

Standard on each Scentinal is a separate dedicated micro-computer acting as an on-unit server to run Scentroid's Sensor Information Management System (SIMS3). Through the 7" touchscreen, users are able to **view historical data, alter system configurations, perform calibrations, assess real-time readings and set alarms and notifications.** The Scentinal's on-unit server is capable of storing data for up to **5 years**. This data can be polled by the central station at any time; facilitating safe storage even if the system communication becomes lost. In fact, **the Scentinal has the capability to operate without an external server.** The system is password protected to ensure only authorized users have access to critical system parameters.

Flexible Sensing & Modular Design

The Scentinal product can be equipped with up to 20 sensors from Scentroid's sensor list **(viewable at www. scentroid.com)**

There are 5 categories of sensors:
- Photo-Ionization Detector
- Non-Dispersive Infrared
- Electro-Chemical
- Laser Scattered Counter (for PM1-10)
- Metal Oxide Sensor

Each Scentinal can be customized with the specific sensors that are best suited for your industry. Our flexible pricing means you pay for exactly what you need. Based on pollutant concentrations or odor units - **All limits and activation conditions are set through the SIMS software via remote server or on-device touch screen.**

Installation & Connectivity

Each Scentinal has a micro controller; allowing the unit to record it's GPS positioning. This position is sent to the central server during each data transfer. At the time of the installation, the technician simply needs to mount the Scentinal and power it on. **The central computer will automatically identify the unit and know of its exact location**. To reconfigure the network, the physical unit can be moved, and the system will automatically adapt to this change. Multiple Scentinal units can be configured within one monitoring area. The connectivity is flexible and secure using one of the following options:

- ☑ Encrypted transfer over GPRS
- ☑ WIFI
- ☑ LAN
- ☑ Analog/SCADA/MODBUS

The system can either connect to a local server or Scentroid's cloud-based SIMS server. It is even possible to operate Scentinal with no centralized servers thanks to its on-board server.

Alarms & Notifications

The Scentroid "Sensor Information Management System" (SIMS3) provides the capability for the Scentinal platform to **set up alarms and notifications.** Alarm levels can be set up based on individual pollutants or on the odor concentration. Breaching the designated alarm thresholds will trigger SMS and/or emails alerts to be sent out to the authorized operators. Additionally, Scentinal can be setup to provide localized visual and audible alarms. An authorized user can remotely configure each Scentinal; providing it with the desired sampling rate, transmission rate, purging frequency and more. **Scentinal can also transmit data over WIFI or LAN networks to a local server running a client SIMS database – providing additional security**.

Noise Monitoring

In addition to gas and particulate monitoring, **the Scentinal can be equipped with an outdoor Class 1 noise sensor**. No additional equipment is required to measure and record ambient noise. Integrated automatic calibration make Scentinal convenient and accurate. **Noise measurement range is from 30 to 100 dB (A)**.

Self-Purging

Scentinal uses a new method of decontamination to ensure accurate reading, even at ppb levels. Periodically (interval is pre-set remotely through SIMS software or on-device server), **the system injects carbon filtered air into the sample line to measure contamination**. If contamination is detected, Scentinal will start its **ozone generator** and flush the lines, pumps, and sensors with **ozone and hydroxyl.** These reactive molecules will destroy all bacteria, mold, and pollutants. Scentinal will then flow-push carbon filtered air again and ensure the system is completely purged and decontaminated.

This means that after the initial installation, **Scentinal is virtually maintenance free**.

Scentinal for Process Control

In addition to email and SMS alarms, **every Scentinal is equipped with multiple industrial relays of up to 20 Amps** that can be used to control a variety of equipment. For example, Scentinal can be used to:

- Provide visual and audible alarms
- Engage odor control technologies (e.g. misting systems) when fence-line pollutants exceed designated thresholds
- Secondary polishing filter only when needed; reduce operating costs
- Activate external sampling pump for collecting an air sample using a PTFE or nalophan bag

The limits and conditions for engagement of each relay can be set based on pollutant concentrations or odor units. All limits and activation conditions are set through the SIMS software via remote server or on-device touch screen.

Automated Calibration

This system features a variable gas concentration output through use of **high-precision mass flow controllers.** A built-in **zero air** generator is used for a reliable and clean sweep of air, using a **3 stage scrubber**. Our automatic calibration system offers the user full monitoring and control of clean air flow, at a rate from 0 to 10 liters per minute. A full automation and integration with Scentinal SL50 can be used for **daily calibration with zero operator interference.**

Our system also features **PTFE and Teflon coated wet surfaces** to prevent all forms of contamination an absorption. Using our calibration system not only ensures an **increase in sensor accuracy and reliability,** but an over the air monitoring through our diagnostics service.

Example: CO₂ Sensor

Cal Gas	Reading 1	Reading 2	Reading 3	Average
0	0	15	11	8.67
500	510	488	479	492.33
1000	1030	952	980	987.33
2000	2187	2035	1980	2067.33
3000	3096	3051	2960	3035.67
4000	3910	4091	4030	4010.33
5000	4930	5032	5133	5031.67

CO2 Sensor
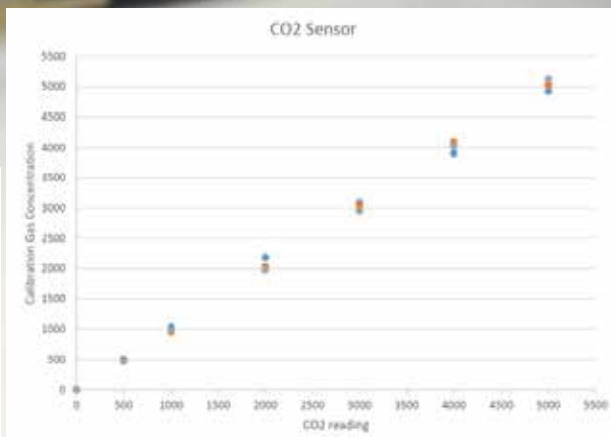
Example: H₂S Sensor

Cal Gas	Reading 1	Reading 2	Reading 3	Average
0	0	3	2	1.67
100	102	98	108	102.67
200	209	205	208	207.33
400	395	382	409	395.33
600	611	591	582	594.67
800	823	795	770	796.00
1000	980	950	985	971.67

H2S Sensor
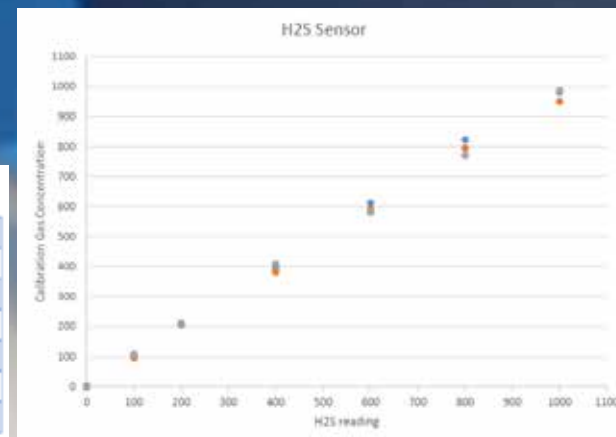
Data Server & Communication Protocol

Cloud Based Hosting

The central monitoring station is hosted on a **secure cloud-based server;** allowing remote access with any smart device that is connected to the internet. The access is restricted, and the **data is encrypted for maximum security.** Users are given an identification and password combination which will define their permission level. For example, a standard user who accesses the platform is only able view and download the results, while a user with administrator access can reconfigure the system and redefine parameters.

The monitoring station is designed to collect all data from the sensors and present the sensor data in an **easy to understand graphical interface.**

Local Server (optional):

Scentinal can be configured so that the SIMS (Scentinal Information Management System) software is hosted on a local server, **specified by the user.** This server must have adequate connection to a secure Wi-Fi or LAN network. **Scentroid will provide all necessarily hardware and software to setup a local server.** This option includes: Computer hardware (including monitor, keyboard...), SIMS software, Ethernet hub.

Communication Protocols

GPRS:

Scentinal, by default, comes with a GPRS module, allowing for **wireless communication through existing cell towers.** The communication is encrypted and sent to Scentroid's secured **SIMS cloud server.** A local Sim card should be obtained by the user to facilitate this data transmission.

WIFI/LAN:

Scentinal can also transmit data over **WIFI or LAN networks to Scentroid's cloud server** or a secured local server. LAN connection is included by default and WIFI is included as an option when ordering.

Analog/SCADA/MODBUS:

Scentinal is an o**pen platform allowing interface to many other instruments and systems such as the plant SCADA.** Scentinal can be setup to transmit any one of the sensor outputs as 0-5V or 4-20mA to be connected to plant monitoring systems such as SCADA.

Introducing SIMS3: Sensor Information Management System

The sensor information management software, SIMS3, is our all-inclusive software used to view and analyze historical data, run diagnostics, make predictions, and configure various settings for your supported Scentroid device. It offers a complete and integrated suite for ambient air chemical analysis and odor management. SIMS3 can collect data from thousands of devices covering an entire area, using a unique and highly intuitive facility control system.

Facility Organization

All facilities are separately organized so that the users of each will only see data from their own units. Regulators will have an overall view of all facilities within their monitoring scope.

SIMS3 AI

SIMS3 AI utilizes both continuous pollution monitoring and live weather data to calculate a real-time odor plume model, displaying an exact location and spread of odor emissions.

Complaint Designation

Nearby complaints are automatically assigned to facilities, and even sources within facilities, so that the system provides a perfect blend of real-time odor impact estimation, with the registration and further management of odor complaints from neighboring residents.
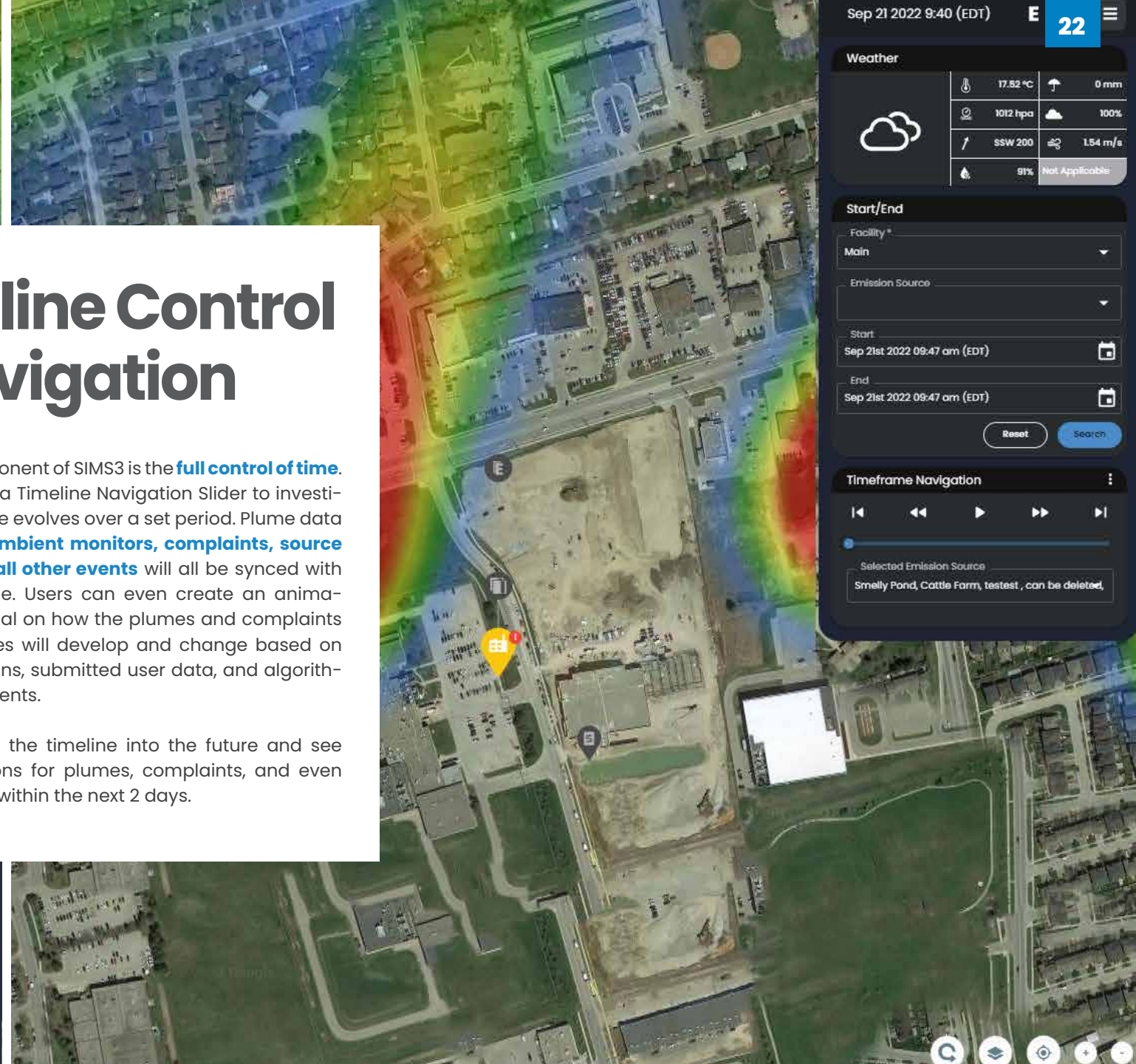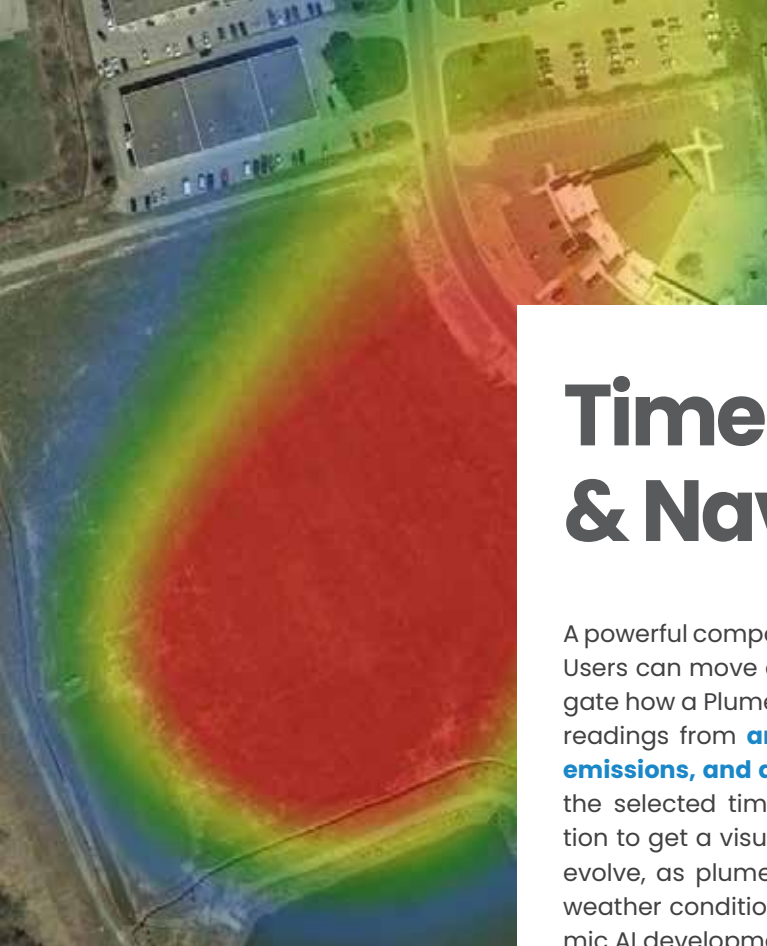
Modules

The map module itself displays a wealth of information including locations of your air quality monitoring devices, their live sensor readings, the location of sensitive receptors, odor complaint locations, and their justification status. The map module is complemented by a diverse series of user analytics to assist you with determining a wealth of parameters with the click of a button!

User Settings

The system is further supported by a robust settings component, allowing the quick change of user permissions, access privileges, notifications settings and more, all in one convenient window!

Sep 21 2022 9:40 (EDT)

Weather

17.52 °C		0 mm	
1012 hpa		100%	
SSW 200		1.54 m/s	
91%	Not Applicable		

Start/End

Facility *
Main

Emission Source

Start
Sep 21st 2022 09:47 am (EDT)

End
Sep 21st 2022 09:47 am (EDT)

Reset   Search

Timeframe Navigation

Selected Emission Source
Smelly Pond, Cattle Farm, testest , can be deleted,

Timeline Control & Navigation

A powerful component of SIMS3 is the **full control of time**. Users can move a Timeline Navigation Slider to investigate how a Plume evolves over a set period. Plume data readings from **ambient monitors, complaints, source emissions, and all other events** will all be synced with the selected time. Users can even create an animation to get a visual on how the plumes and complaints evolve, as plumes will develop and change based on weather conditions, submitted user data, and algorithmic AI developments.

Users can move the timeline into the future and see SIMS3's predictions for plumes, complaints, and even sensor readings within the next 2 days.

Timeframe Navigation

Selected Emission Source
Cattle Farm

Weather & Complaint Forecasting

The **built-in weather forecasting module** allows the user to see any future weather events, determine complaint risk probability, view temperature, and more. **Complaint risks are displayed underneath each individual forecast,** whether daily or hourly, to assess the potential of receiving an odor complaint at that time, or for that date. Clicking on any date within the forecasted period will let the user **generate a plume** based on changing weather patterns, along with a complaint risk probability rating.

- Odor: 35
- OCU Maint.: 19
- Sludge Delivery: 15
- Settling Tank Mnt.: 17
- Mister 1: 8
- Mister 2: 4

46
New Events

23
Events

29
Events

Event & Notification Log

The SIMS3 **Event Log** contains event data, time frame, justification, occurrences, intensity, and a brief description. At a glance, users can determine the **most logged event types,** determine the weekly **frequency of logged events,** and track the **most active day**, **most active time**, and **total events registered**. A series of filters allows users to quickly find a specific event, notification, event type, new or read status, event time, justification status, occurrences, intensity, and more.

Our **notification center** allows you to quickly view your instrument's alarms through a clean and organized interface. Here, you can access your device, look up a specific sensor, display all of your established alarms, and obtain a detailed breakdown of your alarm status.

Event Notification List

Status ⋮	Type ⋮	Registrant ⋮	Event Time ⋮	Justification ⋮	Correlation ⋮	Description ⋮		Intensity ⋮	mark ⋮
New	Odour	SR: Stanley Homes	2022.06.14 7:30 – 14:25	Manual Not Justified	View Correlation	Stanley Homes r... sensitive recepto...		5	☑
New	Alarm: H2S	System	2022.06.16 14:05 – 15:30	Manual justified	None	Exceedance alar... consecutively wi...		N/A	☑
New	OCU Maint.	Benjamin	2022.06.16 15:00 – 17:00	Auto Justified	View Correlation	Scheduled maint...		N/A	☑
New	OCU Maint.	Benjamin	2022.06.17 5:00 – 7:30	Auto Justified	View Correlation	Emergency main...		N/A	☑
New	Sludge Del...	Benjamin	2022.06.18 18:30 – 20:30	Auto Justified	View Correlation	Scheduled proce...		N/A	☑
New	Settling Ta...	Benjamin	2022.06.21 8:45 – 11:00	Auto Justified	View Correlation	Scheduled weekly maintainence	N/A	1	N/A ☑
New	Odour	SR: Stanley Homes	2022.06.21 9:30 – 14:25	Manual not yet justified	View Correlation	Stanley homes filed a complaint, recorded immediately.	Might be a result of plant. do not mark as justified pls – Benj	1	4 ☑
Read	Odour	EXT: Leslie	2022.06.21 9:40 – 17:00	Auto Justified	View Correlation	HI It smell bad outside today very hot day pls remove smell thank you	Caused by settling tank maint today. – Benj	1	7 ☑
Read	Odour	EXT: Paolo	2022.06.21 10:20 – 13:20	Auto Justified	View Correlation	Automatically provided by: Neighborhood Odor Watch App	Caused by settling tank maint today. DO NOT DO THIS ON WINDY DAY! – Benj	1	4 ☑

Temporal

Statistical

AQI

Heat Map

Events

Wednesday
Most Active Day

13:22
Most Active Time

98
Total Events

Odor
Most Active Type

Justification
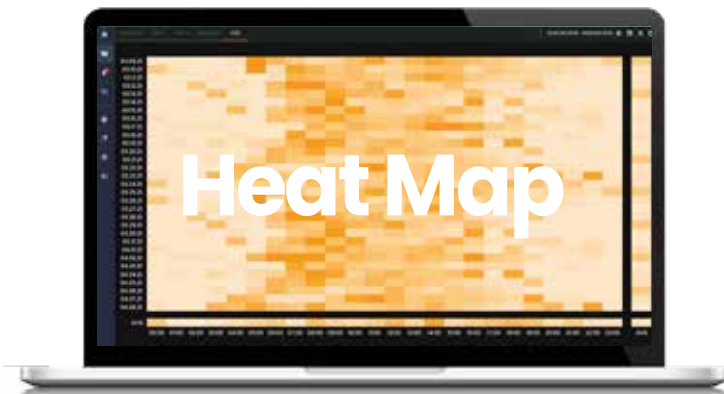
For more details on our SIMS3 platform, please see our **SIMS3 Brochure** available at **www.Scentroid.com**

Robust User Analytics

The **SIMS3 analytics module** provides you with the tools you need to make informed decisions regarding your monitoring projects. This module allows you to view data in several formats including t**emporal view, statistical view, AQI Analysis view, and heat map.** Take your analytic capabilities even further by analyzing your **recorded events, event types, and overall event activity.**

SIMS3 Feature List

SIMS3 Feature List	Base	Pro	Pro + OMS
Total Number of Users	1	5	100
Secure Data Storage	2 Years	Unlimited	Unlimited
Graphing of Multiple Sensors per Individual Equipment	O	O	O
Equipment Error Notifications and Alarms	O	O	O
Over-the-Air Firmware Upgrades	O	O	O
Setup of New Facilities and AQSafe Networks	O	O	O
Email and SMS Alarm System	✕	O	O
Graphed Sensor Comparison Mode	✕	O	O
Automatic Event Detection	✕	O	O
API for External Data Retrieval and 3rd Party Integrations	✕	O	O
Auto Calibration Suite	✕	O	O
Weather Forecasting	✕	O	O
Complaint Management	✕	✕	O
Dispersion Modeling	✕	✕	O
Complaint Risk Forecasting	✕	✕	O
Virtual Sensors	✕	✕	O
Unknown Source Identification	✕	✕	O
Odour Concentration Estimation and Calculation	✕	✕	O
Reporting and Analytics:			
Automatic Report Generation	✕	O	O
Export of Raw Data to Excel	O	O	O
Temporal Analytics Reporting	O	O	O
Statistcal Analytics Reporting	O	O	O
Heat Map Analytics Reporting	✕	O	O
Event Analytics	✕	O	O
Customized AQI Analytics	✕	O	O

Odor Monitoring

Our Approach To Odor Management

Sensors are selected based on the application, and therefore, are **customized to individual industries, plants, facilities, sites, etc**. This allows Scentinal to find the real tracer that can be used to correlate chemical readings to odor concentration.

1. A large number of calibration points (minimum of 30) are collected using the **SM100 infield olfactom- eter.** The initial readings along with periodic mea- surements ensure the system has enough data points to develop an accurate model reflecting all changes to process, pollutants, and sensors.

A sophisticated **machine learning algorithm** is used to find the complex correlation between odor units and pollutants measured. The software provides quality of the fit and the expected error range to ensure reliable data is used.

Measuring Odor Concentration

Scentinal measures concentration levels of pollutants in the ambient environment and simultaneously, outputs odor concentration levels as well. Data from individual sensors are processed by Scentroid's chemical and olfactometric correlation system in order to determine the **odor concentration** in an OU/m3 annotation. The system uses a deep learning algorithm to determine an odor concentration based on existing readings from the chemical sensors.

Olfactometric measurements, sampled using Scentroid's SM100 Field Olfactometer, are collected periodically (monthly, bi-monthly, or semi-annually) and are input into the learning algorithm along with the recorded chemical composition. This sophisticated algorithm will create a non-linear relationship between chemical readings and odor concentrations. This data will be used to update the network and enhance the accuracy related to the prediction of odor concentrations.

E-Nose Limitations

Traditional E-Nose is a collection of 4 to 30 metal oxide sensors combined with a software algorithm. **The calculations from the sensor for odor concentrations are based on a handful of calibration points.** These points are obtained using traditional olfactometric analysis in a laboratory. Some limitations with this approach include:

• The strong cross sensitivity that is inherent with metal oxide sensors
• The rapid "drift" of sensors results in different signals for pollutants over time
• The handful of calibration points is insufficient for the complex correlation between sensor readings and odor concentrations

Odor Complaint Management

Within SIMS3, **Odor complaints** are automatically an-
alyzed to determine the individual validity of each
against a known **odor source or event**. They're then
visually marked as justified (red), not justified (green),
and to be justified (yellow). For each complaint the user
will receive a list of all contributing sources and events.
**Complaints with no known sources will be analyzed to
determine validity and to identify possible locations of
the unknown contributing source.**

 A location that has a potential for an odor complaint
– for instance, a person who'll complain frequently or a
company that'll be directly affected by an odor, can be
marked as a **Sensitive Receptor**. Odor or pollutant con-
centrations at Sensitive Receptor locations are estimat-
ed and modeled every 10 minutes, and users can create
alarm levels and view historic odor concentrations at all
Sensitive Receptor locations.

Scentinal Accessories

Air Conditioning & Heating System

Scentinal can equipped with a powerful **air conditioner** that's capable of ensuring an optimal internal temperature even during extreme or pro-longed weather events. In cold climates, the built-in heater will activate to keep the sensors above 15°C. **Internal temperature can be monitored remotely through the SIMS software.** The enclosure is also fully insulated to reduce power consumption and ensures that Scentinal can operate in any ambient temperature ranging from -50°C to + 50°C.

Scentinal Solar Power Unit

For locations where getting power to Scentinal might be challenging, **a solar panel and rechargeable battery can provide all the necessary power for your Scentinal.** Scentinal's optional solar power unit will provide all the necessary charge controllers, power management system, and connections to install your solar panels and batteries.

Wind Sensor

Scentinal can be equipped with on-board wind direction and wind speed sensor. This information can be used to determine l**ocalized wind conditions such as turbulence and down drafts.** Scentroid offers either ultrasonic or cup and vane wind sensors to fit any application and budget. For gathering meteorological data, Scentroid provides an **independent weather station that can installed in accordance to USEPA guidelines.** The Scentroid weather station is equipped with its own communication module and will seamlessly integrate with Scentinal using the SIMS local or cloud-based software.

Multiple Sampling Ports

Scentinal can be equipped with up to **2 sampling ports.** This allows the unit to measure pollutants from different process points or locations. For example, Scentinal can be setup to record input and output of a bio trickling filter to provide live efficiency calculations. The ¼" sample ports can be outfitted with ambient sampling hoods or be directly connected to a PTFE line.

Traffic Counters

Our Scentinal can be equipped with a **full, non-contact vehicle counter.** A proprietary target tracking algorithm allows simultaneous tracking of multiple vehicles traveling in adjacent lanes, further facilitating accurate counting. **Our sensors offer the greatest value in traffic counting and speed detection available.** These sensor systems are easy to install and priced right for any budget. They will allow you to collect and view traffic details in real time from anywhere.

Our counter also features **Doppler technology,** resulting in accurate direct speed measurement and readings. The built in vehicle classification system recognizes more than 4 vehicle size classes.

Technical Specs

Ambient Operational Temperature:
-10 degrees Celsius to 60 degrees Celsius

Ambient Relative Humidity:
0% to 100% relative humidity

Ideal Weather Conditions:
All, including snow, rain, and other inclement weather.
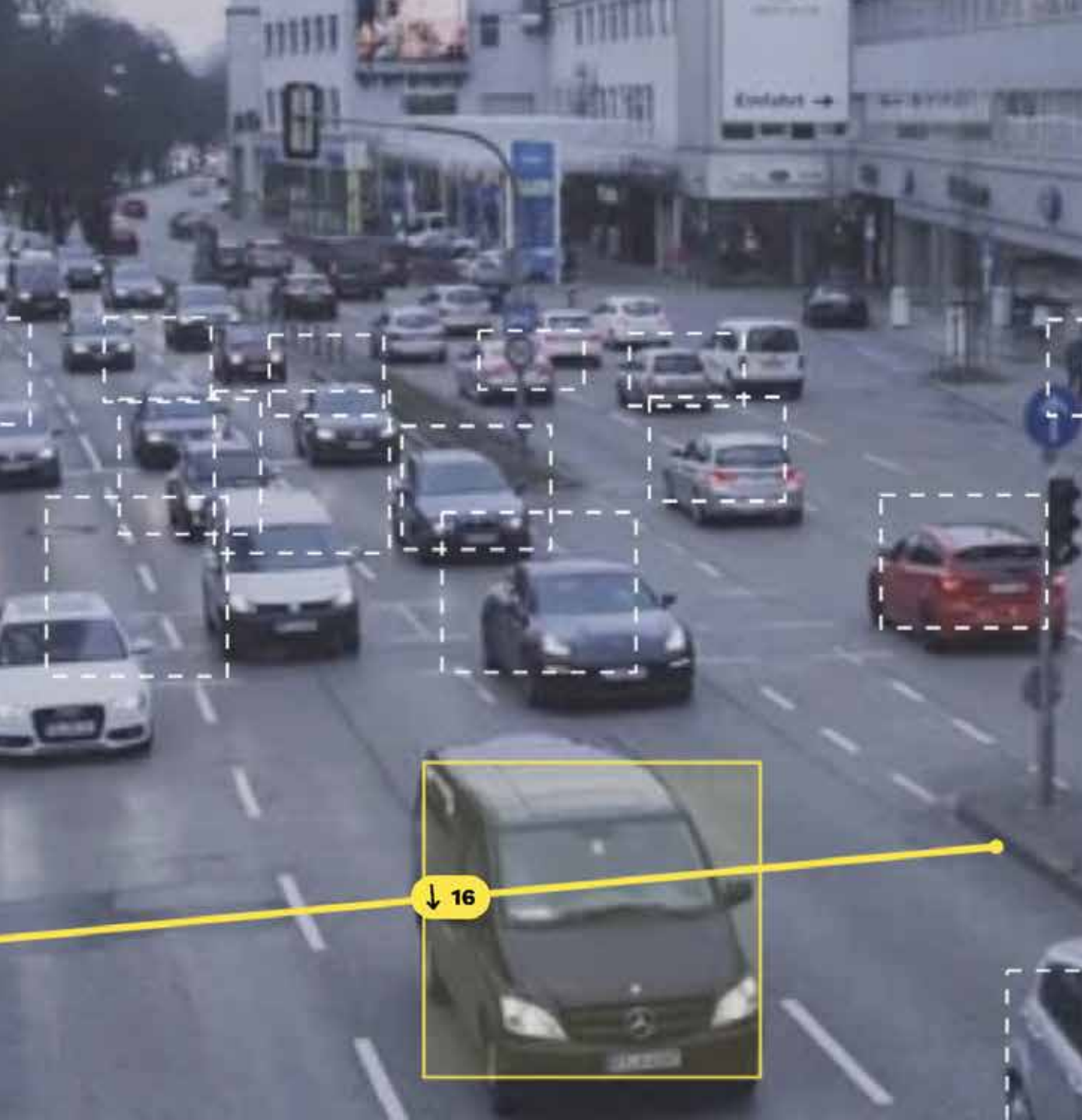
Visibility Sensors

Your Scentinal can be equipped with a cutting edge **visibility sensor,** configured for accurate measurement of visibility in the densest of fogs, snow, or sandstorms to pristine and clear air conditions. With a range of 6m to 80km (20 ft 0 50 miles) the proven optical, weatherproof technology will suit all of your needs and more. **These sensors are designed to provide both accuracy and reliability in a cost effective package.** Applications include synoptic stations, lighthouses, highways, resort areas, as well as shipboard and other marine platforms.

Visibility is detected using widely accepted principles of **forward scattering.** A high output infrared LED transmitter projects light into a sample volume and light scattered in a forward direction is collected by the receiver. The light source is modulated to provide excellent rejection of background noise and natural variations in background light intensity. The sensors can asynchronously stream RS232 or RS485 visibility data at user configured intervals, or can be operated in the polled mode, outputting information only when asked. Visibility is also compared to the preset relay thresholds, so that when an alarm condition is reached, the relay output is switched. Visibility thresholds can be set to any value within the instrument range.

Our visibility sensor comes with a heated window for use in sub-zero climates. It has been fully integrated with our SIMS3 system to allow clients to view all air pollution and meteorological data in one simple place.

Black Carbon Module

Our Black Carbon module is real-time **5-wavelength UV-IR Black Carbon monitor** with an 85 sampling location automatic filter tape advance system which allows for 3-12 months of continuous measurements.

The device is a self-contained instrument with built-in pump, flow control, and data storage. The module also features on-board **GPS, satellite time synchronization, accelerometer, and an accurate altimeter/barometer**. This unit has been designed for extended multi-month measurement campaigns in both stationary and mobile applications The 85 location filter tape cartridge allows for extended continuous sampling of higher concentrations for up to a year depending on the sampling environment conditions and instrument settings.

The spectrum measurement provides insight into the composition of light absorbing carbonaceous particles and helps to distinguish among the different optical signatures of various combustion sources such as diesel, woodsmoke, biomass, and tobacco. The instrument corrects for optical loading effects and provides additional information about aerosol optical properties.

The module measures based off of real-time Aethalometer method, **5 wavelength absorption analysis** by measuring the rate of change of transmitted light due to continuous particle deposition on filter. Measurement at 880 nm interpreted as concentration of Black Carbon ('BC'). Measurement at 375 nm interpreted as Ultraviolet Particulate Matter ('UVPM') indicative of woodsmoke, tobacco, and biomass burning.

Airborne Lead Analyzer

Our automated airborne lead analyzer automatically samples, extracts, and quantifies the **concentration of total lead in air.** Compliance with environmental and occupational health regulations can be easily determined, with sample results available in 7 minutes. User selected sample times can range from 10 minutes to 24 hours, and s**ample results are available in just 7 minutes!** Output is reported in ug/m3 or ug/filter, depending on your sample source. Auto-calibration options are available, and up to 20 air samples can be collected and analyzed.

After passing through filter media, airborne metal samples are concentrated into an 'aqueous phase' and analyzed voltammetrically. This yields a correct airborne lead concentration in ug - total metal per cubic meter of air. Machine cleans itself and resets for the next sample to be tested.

Ideal for a wide variety of industries, including automotive supply chains, lead acid battery manufacturing and recycling, lighting manufacturing, metals, processing, mining, petroleum, and lead based paint abatement.

Tunable Laser Diode Spectrometry (TLDS) Sensor

Our Tunable Diode Laser Spectrometry (TLDS) module for sensing methane (CH4) measurements is now ready for public use. Our TLDS technology allows the detection method of sensing methane in sub-ppm levels with near-zero cross-sensitivity. This ensures reliable, accurate measurements of major greenhouse gas. The TLDS module is compatible with any of Scentroid's platforms due to its compact design. This includes the Scentinal SL50, TR8, DR1000, DR2000, US20, and more!

This revolutionary low-cost technology requires minimal maintenance. The proprietary lock-in technology and the on-board digital signal processing compensates for drift phenomena. This results in a stable, reliable and incredibly enhanced device as well.

Within the Environmental and climate monitoring industries, the TLDS can be used for fence line monitoring. This is in conjunction with our stationary Scentinal SL50 or mobile monitoring using our DR series of flying laboratories over compost, feedlots, and other intensive greenhouse gas emitting operations. The applications are virtually limitless!

Benzene Detection

Benzene is typically formed from both natural processes and human activities. A few common sources may include volcanoes, forest fires, crude oil processing, gasoline production, and cigarette smoke. It is widely used in several manufacturing processes including plastics, resins, synthetic fabrics, lubricants, rubbers, dyes, detergents, and pesticides. Exposure to Benzene can be incredibly harmful, and lead to many adverse health effects, even death.

Scentroid has developed a unique solution for monitoring Benzene. Create a detection perimeter around your facility by utilizing a network of our CTair or Scentinal units.

- Ask about on-site support which involves the identification, labeling, and monitoring of all potential leak sources
- Use of infrared cameras enables the identification of large leaks
- A full report is provided upon completion of analysis

Scentinal Applications

Urban

Urban air pollution is a significant threat to human health and the quality of life of all people around the world. Minimizing urban air pollution not only serves as a healthy buffer for people in their everyday lives but also encourages reducing the emissions of harmful compounds. Scentinal is a perfect fit for air quality monitoring of the cities.

Recommended Sensors:

Carbon Dioxide - (Low Concentration)
Carbon Monoxide - (Low Concentration)
Oxidizing Gases Ozone
Nitric Oxide - NO (Low Concentration)
Nitrogen Dioxide - (Low Concentration)
Oxygen
Total VOCs (ppb) - PID
Sulfur Dioxide - (Low Concentration)
Particulate PM 1, 2.5, 10 (Simultaneous)

Odor

Environmental odor is among the highest sources of nuisance; festering the largest amount of complaints from residents. Environmental odor can be generated from a variety of industries including food processing, tobacco products manufacturing, chemical plants, paint plants, asphalt plants, pulp and paper, WWTP, and etc. Scentinal can be used to monitor odor emissions in order to help plants optimize processes and reduce odor impact.

Recommended Sensors:

Ammonia
Hydrogen Sulfide - (Low Concentration - ppb)
Organic Solvents (Ethanol, Iso-Butane)
Total VOCs (ppb) - PID
General Purpose Odors (VOCs)
TRS and Amines
Air Contaminants (Ammonia, Ethanol, Toluene)

Wastewater

One of the most prominent issues of concern from wastewater treatment plants (also known as sewage treatment plants) is odor. Many chemicals in these facilities generate odor; the majority are sulfur-based. At the start of the process H2S, DMS, and other sulfur compounds are abundant, while at the trailing end of the process (sludge processing), VOCs are more predominant.

Recommended sensors include:

Ammonia
Hydrogen Sulfide - (Low Conc. ppb) (High Conc. ppm)
Total VOCs (ppb) - PID
TRS and Amines
Air Contaminants (Ammonia, Ethanol, Toluene)
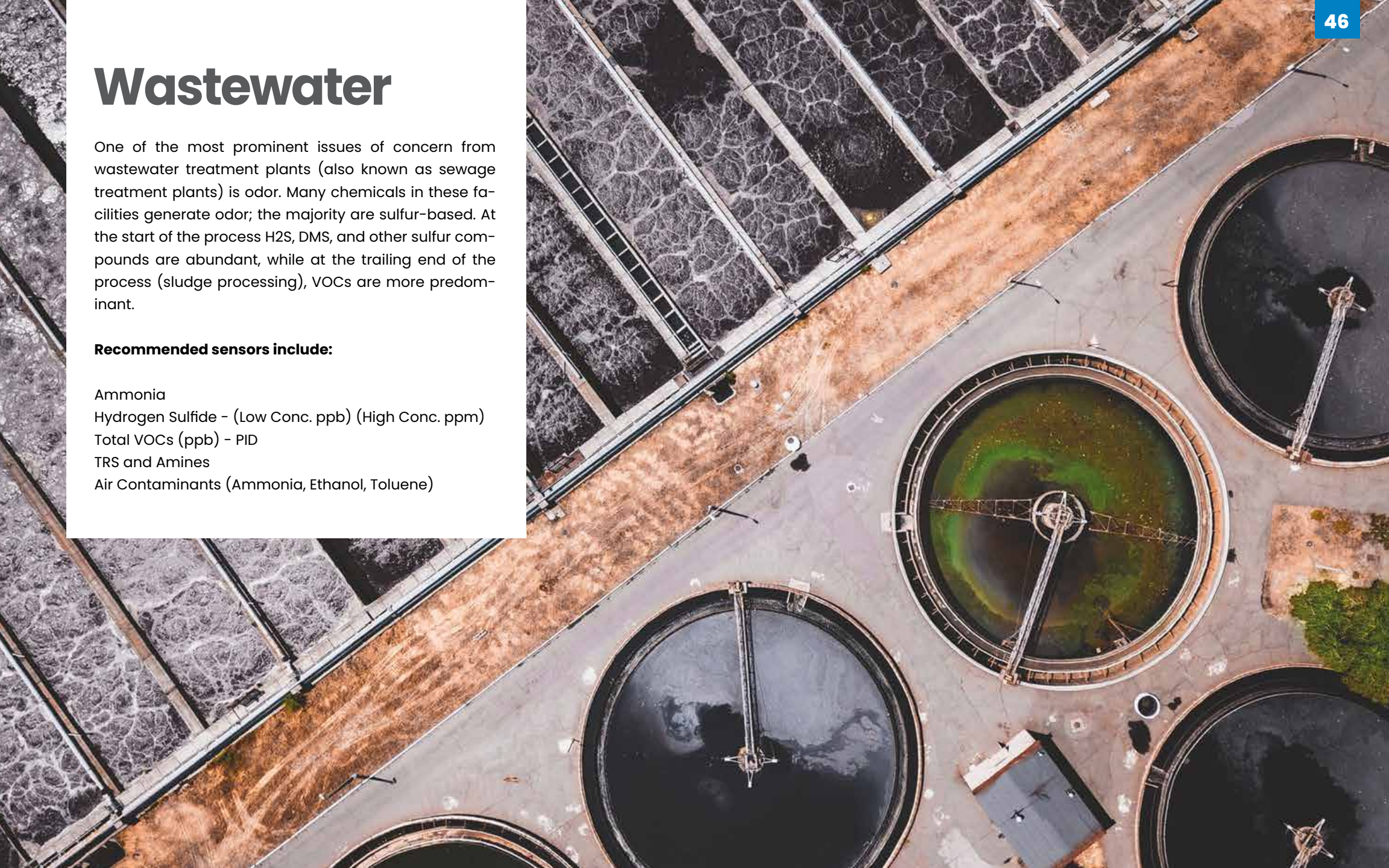
Indoor Air Quality Monitoring

Indoor air quality plays an important role in human health and comfort. Scentinal provides a solution to monitor and control indoor air quality. Scentinal can also provide continuous monitoring of any selected chemical compound(s), this includes CO_2, CO, O_2, PM 1-10 as well as pollutants such as H_2S, CH_2O, SO_2, VOC, and Odor. The system can be programmed to activate mitigative technology or central HVAC systems if pollutant levels are found to exceed set threshold limits. This active monitoring and mitigation approach will ensure fresh, healthy air for all staff, laborers, and nearby residents and businesses.

Recommended sensors include:

Carbon Dioxide - (Low Concentration)
Carbon Monoxide - (Low Concentration)
Hydrogen
Hydrogen Sulfide - (Low Concentration, ppb)
Nitric Oxide - NO (Low Concentration)
Nitrogen Dioxide - (Low Concentration)
Oxygen
Total VOCs (ppb) - PID
Sulfur Dioxide - (Low Concentration)
Formaldehyde
Particulate PM 1, 2.5, 10 (Simultaneous)

Oil & Gas

Pollutant and Odor monitoring in the petrochemical and oil and gas industry is critical due to the number of hazardous air pollutants released in these processes. Fence line and in-plant monitoring allows the plant to not only ensure adherence to emission regulations and standards, but also to detect issues within the process such as tank leaks, loading spills, and other unexpected events.

Recommended Sensors:

Carbon Dioxide - (Low Concentration)
Carbon Monoxide - (Low Concentration)
Chlorine
Ethylene Oxide
Hydrogen Sulfide
Hydrogen Chloride
Hydrogen Cyanide
Ammonia
Oxidizing Gases Ozone and Nitrogen Dioxide
Phosphine - (Low Concentration)
Phosphine - (High Concentration)
Hydrogen Sulfide - (Low Concentration - ppb)
Organic Solvents (Ethanol, Iso-Butane, H2)
Methane (LEL)
Nitric Oxide - NO (Low Concentration)
Nitric Oxide - NO (High Concentration)
Nitrogen Dioxide - (Low Concentration)
Oxygen
Total VOCs (ppb) - PID
Total VOCs (ppm) - PID
Sulfur Dioxide - (High Concentration)
Sulfur Dioxide - (Low Concentration)
Formaldehyde
Particulate PM 1, 2.5, 10 (Simultaneous)
Air Contaminants (Ammonia, Ethanol, Toluene)

Agriculture

Agricultural facilities emit a wide array of pollutants that must be monitored. The majority of these pollutants are not hazardous but are odorous and therefore a source of nuisance. Scentinal can provide monitoring of both odor and pollutants in agricultural facilities.

Recommended sensors include:

Ammonia
Carbon dioxide
Methane
Particulate PM 1, 2.5, 10 (Simultaneous)

General Safety

Workers from many industries are exposed to multiple harmful gazes every day. These chemicals can lead to fatigue, respiratory decline, illness, and a general decrease in the overall quality of life. Industries need to monitor their air quality and ensure safety for their workers.

Recommended sensors include:

Carbon Dioxide - (High Concentration
Carbon Monoxide - (High Concentration)
Chlorine
Ethylene Oxide
Hydrogen
Hydrogen Chloride
Hydrogen Cyanide
Ammonia
Oxidizing Gases Ozone and Nitrogen Dioxide
Phosphine - (Low and High Concentration)
Hydrogen Sulfide - (High Concentration - ppm)
Methane (LEL)
Nitric Oxide - NO (High Concentration)
Nitrogen Dioxide - (High Concentration)
Total VOCs (ppm) - PID
Sulfur Dioxide - (High Concentration)
Formaldehyde

Process Control

Scentinal can be programmed to detect in-process gazes and activate, one or more of 3, built-in relays to control in-process events such as mitigative technologies and predesignated alarms. Scentinal will also calculate efficiency of activated-carbon systems and provide notifications for replacement. For example, Scentinal can detect if odor, after being treated with a bio-filter, is above the regulatory permitted value. If it is, the system will automatically engage carbon-filtration. By using activated carbon scrubbing only when needed, the Scentinal will reduce power consumption and increase the life of granular carbon. Some possible example of control conditions:

Odor > 500 OU
H2S > 1 ppm
TVOC > 0.5 ppm
NH3 > 2 ppm

Recommended Sensors are:

Carbon Dioxide - High Concentration
Carbon Monoxide - High Concentration
Oxidizing Gases Ozone
Nitrogen Dioxide
Methane (LEL)
Sulfur Dioxide
Nitrogen Oxides

Compost

Workers in compost facilities are exposed to chemical and biological risks. Additionally, nearby neighborhoods may also be affected by the same contaminants. It is critical to monitor air quality in these type of facilities in order to ensure proper operation and uphold adherence to pertinent regulations.
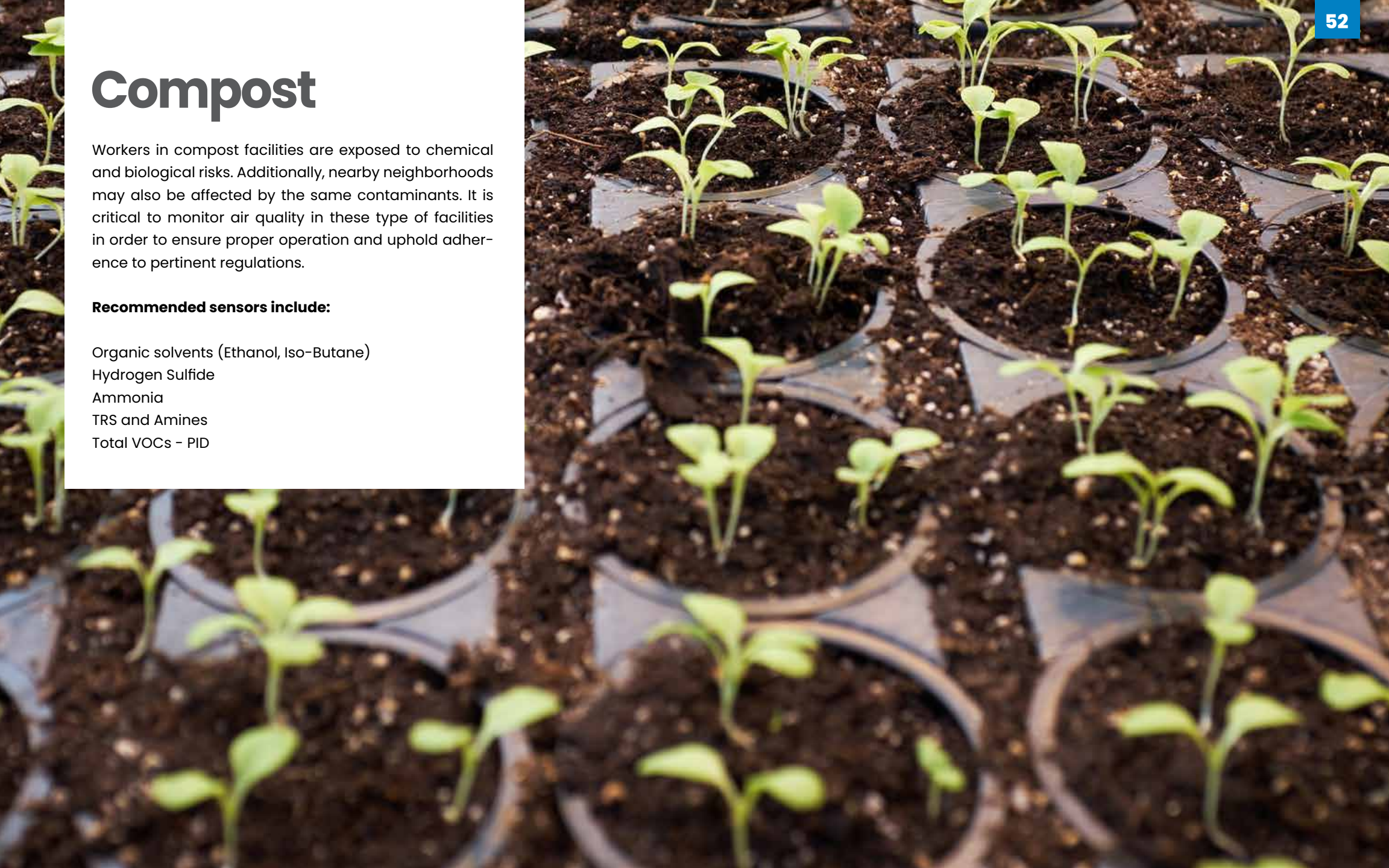
Recommended sensors include:

Organic solvents (Ethanol, Iso-Butane)
Hydrogen Sulfide
Ammonia
TRS and Amines
Total VOCs - PID

Installation & Maintenance

Installation

The small form factor and small mass of the Scentinal makes it easy to transport and install. **To install the Scentinal, all that is required is to mount the unit to a wall or a pole and plug in the AC power.** Solar panels and rechargeable battery options enable the unit to work in remote locations. Once powered, the instrument will determine its location using a **built in GPS receiver** and start transmitting data to the closest SIMS server. That's it!

Maintenance

Scentinal uses a new method of decontamination to ensure accurate reading even at ppb levels. Periodically the system assesses contamination using a **built-in carbon filter** and if required decontaminates all lines, pumps, and valves using oxidizers. Remote diagnostic tools and built-in calibration gas (option) means that **once installed, Scentinal is virtually maintenance free**.

Operational cost of Scentinal is minimal with electricity and data being the only utilities. The system will require less than 0.5 amps at 220 VAC. If you incorporate AC, an additional 75 watt of consumption will be included. With the optional solar panel, there will be no requirement for external electricity. Data cost is paid for one year. After the first year, the data cost is dependent on the country of installation, for example:

Australia, Canada, UAE, UK and USA cost roughly $100 per year ($0.25 per MB rate and 2-minute update time is assumed).

Sensor Replacement

Sensors are covered by a comprehensive warranty for 24 months from the date of shipment. Additional warranty can be purchased to cover sensor replacement. Typical sensor life cycle depends on the type of sensor – generally this is between 1 to 5 years.

Calibration

On-site Calibration

Scentinal can be calibrated through the **on-device 7" touch screen** using calibration gazes. Calibration should be performed, at minimum, on an annual basis to ensure optimal performance. The entire calibration does not take more than 10 minutes per sensor and requires minimal technical skills.

Automatic Calibration

Optional automated calibration module will allow Scentinal to conduct periodic self-calibration. **Scentinal will automatically inject calibration gas**, which is permanently connected to the unit, into the sample line and verify/update calibration parameters, over the air monitoring through our diagnostics service.

Training

Scentroid provides worldwide training programs for our clients and distributors. Training can be conducted by Scentroid or your local distributor. Scentroid training tools include: online training, videos, brochure, operation manual and on-site workshops. We also offer a hands-on training program using our high-tech simulation room. Scentroid's state of the art simulation room is located at our headquarters in Toronto, Canada. You are more than welcome to visit us and meet with the people behind these products

Warranty

We are so confident of the reliability of our products, that we are glad to offer our clients a comprehensive 24 month warranty for your equipment. Additionally, warranties can be extended for the 3rd, 4th and 5th year. For more information about our extended warranties, speak to us today.

Technical Support

We are responsible for any products that exit from our manufacturing warehouse! Our support team offers different ways to help you. Choose the one most convenient for you below!

Local Support
We have developed a vast growing network of distributors and repair facilities. To find your local support please check our distributors map.

Phone Support
Our highly professional customer services are here to serve you, for any technical issue reach them easily via phone: 416.479.0078 – Ext 210

SME Support
Connecting you to the Subject Matter Experts! Our customer support is unique in that you can talk directly to the designer or programmer of each product.

Live Chat
If you feel more convenient to solve your technical issue via chat, No problem! Reach our highly professional customer services through our website-hosted Live Chat.

Email Support
For any technical issue you our engineers are happy to assist via email. For fast and efficient support, simply email our team at   support@scentroid.com

Pollutant	Scentinal Calibration Range	Detection Limit	US EPA Standard	EU Standard
Ozone	0 – 0.05 ppm (1000 µg / m3)	0.01 ppm (2 µg / m3)	0.075 ppm / 8h (157 µg / m3 / 8h)	(0.102 ppm / 1h) (1000 µg / m3) (1000 µg / m3) (1000 µg / m3)
PM2.5	0 – 2000 µg / m3	1 µg / m3	35 µg / m3 / 24h	25 µg / m3 / 24h
PM10	0 – 2000 µg / m3	1 µg / m3	150 µg / m3 / 24h	50 µg / m3 / 24h 40 µg / m3 / 1Y
Odor	1+OU	1 OU	0 OU	NA
Sulfur Dioxide	0 – 10 ppm (0 – 29 µg / m3)	0.009 ppm (25 µg / m3)	0.14 ppm / 24h (365 µg / m3)	(0.133 ppm / 1h) (0.047 ppm / 24h) 350 µg / m3 / 1h 125 µg / m3 / 24h
Carbon Monoxide	0 – 25 ppm (0 – 29 µg / m3)	< 0.04 ppm (< 0.05 µg / m3)	9 ppm / 88h (10.3 µg / m3)	8.74 ppm / 8h 10 µg / m3 / 8h
Nitrogen Dioxide	0 – 0.2 ppm (380 µg / m3)	0.01 ppm (1.9 µg / m3)	0.053 ppm / 1Y (1.9 µg / m3)	(0.115 ppm / 1h) (0.023 ppm / 1Y) 200 µg / m3 / 1h 40 µg / m3 / 1Y

Appendix A: Air Quality Standards. Scentinal adheres to the US EPA Standard, EU Standard, and most international standards.

Glossary A–S

Ambient Air
Atmospheric air in its natural state, not contaminated by air-borne pollutants

Ambient Monitoring
Systematic, long-term assessment of pollutant levels by measuring the quantity and types of certain pollutants in the surrounding, outdoor air

AQI
The Air Quality Index (AQI) is used for reporting air quality changes. Its numbers reveal how polluted or hazardous air may be.

AQI Thresholds
The higher the AQI value, the greater the level of air pollution and the greater the health concern. For example, an AQI value of 50 or below represents good air quality, while an AQI value over 300 represents hazardous air quality.

Back Trajectory
Interpolated measured or modeled meteorological fields to estimate the most likely central path over geographical areas that provided air to a receptor at a given time.

Baseline Impact
Testing method used to evaluate the effects of a change, or to track the progress of an improvement project

Contributing Source
Common odor producing sources including various chemical plants, industrial facilities and operations, wastewater treatment plants, landfills, and more.

Dispersion Modeling
The process of using mathematical formulations to characterize the atmospheric processes that disperse a pollutant emitted by a source.

Emission Rate
Total quantity of any air contaminant discharge into the atmosphere in a given period.

Mass Flow Controller
Automatically controls the flow rate of a gas according to a set flow rate sent as an electric signal, without being affected by use conditions or changes in gas pressure.

Mobile Odor Support Units
Scentroid line of mobile devices (can provide multiple GPS points) that support the usage of odor monitoring or odor patrols. These include but are not limited to the DR2000, TR8, TR8+, SM100, SM100i, and the US20 UrbanScanner.

Odor Concentration
An odor's pervasiveness. To measure odor sensation, an odor is diluted to a detection or recognition threshold. The detection threshold is the concentration of an odor in air when 50% of a population can distinguish between the odorous sample and an odor-free reference sample

Odor Emission Rate
The quantity of odor units (OU) which crosses a given surface divided by time

Odor Justification
The determination of whether or not an odor complaint may be the direct result of a specific odor source.

Odor Plume
Odor plumes are created when odor molecules are released from their source and are taken away in the wind.

Odor Source
The point of origin of a particular odor. A plume develops from this location.

Scrubber
A diverse group of air pollution control devices that can be used to remove some particulates and/or gases from industrial exhaust streams.

Sensitive Receptor
Sensitive receptors are children, elderly, asthmatics and others whose are at a heightened risk of negative health outcomes due to exposure to air pollution. The locations where these sensitive receptors congregate are considered sensitive receptor locations.

Sensor: Electrochemical
(EC) sensors contain cells that convert information from electrochemical reactions into usable data. They measure concentration by oxidizing or reducing a target gas and measuring the resulting current.

Sensor: Laser Scattered Counter
A tiny laser is flashed onto particles, which then radiates outwards in all directions within the sensor chamber. A light detector measures the scatter and determines concentration in air.

Glossary S - Z

Sensor: Metal Oxide Sensor
A tiny laser is flashed onto particles, which then radiates outwards in all directions within the sensor chamber. A light detector measures the scatter and determines concentration in air.

Sensor: Non-Dispersion Infrared
(NDIR) Used to detect gas and measure concentration of carbon oxides. An infrared beam passes through a sampling chamber where each particle present absorbs the infrared light differently.

Sensor: Photo-ionization
(PID) Measures volatile organic compounds and other gases in varying concentrations by breaking molecules into positively charged ions. This is done through UV energy photons in the sensor chamber.

Source Emission (Emission Source)
Emission source refers to any machine, equipment, device, or other article or operation that directly or indirectly releases contaminants into the outdoor atmosphere

Zero Air
Zero Air is produced by mixing pure oxygen with pure nitrogen, thereby eliminating all impurities found in ambient air.

LET'S BUILD OUR NETWORK

linkedin.com/company/scentroid

DO YOU FOLLOW US YET?

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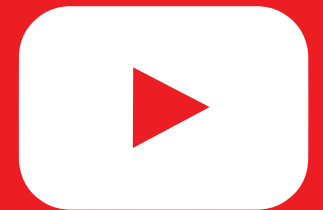**GET THE FULL PICTURE**

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