SCENTROID
Future of Sensory Technology

Mining: Air Quality Monitoring Solutions

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

Mining Air Quality Overview

The mining industry plays a significant role in the global economy by providing essential raw materials for industrial production and manufacturing. However, mining operations understand their facility's environmental impacts, including air pollution. The mining industry is known to produce high levels of dust, toxic gases, and other harmful substances that can affect the air quality of surrounding communities and workers.

The use of advanced air quality monitoring technologies, such as remote sensing and real-time monitoring systems, can provide accurate and reliable data to improve decision-making, reduce risks, and ensure compliance with regulatory requirements. Overall, monitoring air quality in the mining industry is crucial to promoting sustainable mining practices and protecting the health and well-being of people and the environment.

Air Quality Concerns

Monitoring air quality in the mining industry is crucial to protect the health and safety of workers and nearby communities. Exposure to high levels of pollutants can cause respiratory diseases, cardiovascular problems, and other health issues. Regular air quality monitoring can help identify potential hazards, evaluate the effectiveness of pollution control measures, and implement timely interventions to prevent or reduce harmful impacts.

Moreover, monitoring air quality in the mining industry is also important from an environmental perspective. Poor air quality can have far-reaching effects on ecosystems and wildlife, and has been proven to contribute to climate change. Therefore, by monitoring air quality, mining companies can reduce their environmental footprint and promote sustainability in their operations.

Adhering to Safety Regulations

Governments worldwide have established strict regulations and standards for air quality, which mining companies must follow to operate legally.

These regulations typically specify the maximum acceptable levels of various pollutants, such as particulate matter, sulfur dioxide, nitrogen oxides, and volatile organic compounds, emitted by mining operations. By adhering to these regulations, mining companies can prevent or reduce harmful impacts on the air quality of surrounding communities and ecosystems.

Failure to comply with air quality regulations can lead to significant penalties, including fines and legal action. Moreover, non-compliance can damage the reputation of mining companies and lead to community opposition, which can impede future mining projects.

Limiting Exposure & Health Risks

Air quality monitoring devices play a critical role in preventing health risks associated with mining operations. These devices allow mining companies to measure the levels of various pollutants in the air, which can help identify potential hazards and implement timely interventions to prevent or reduce harmful impacts.

Exposure to high levels of pollutants, such as particulate matter and toxic gases, can cause respiratory diseases, cardiovascular problems, and other health issues, both in workers and nearby communities. By using air quality monitoring devices, mining companies can detect elevated levels of pollutants and take action to mitigate the risks. This can include implementing pollution control measures, adjusting mining operations to minimize emissions, and providing personal protective equipment to workers.

Stationary Monitoring

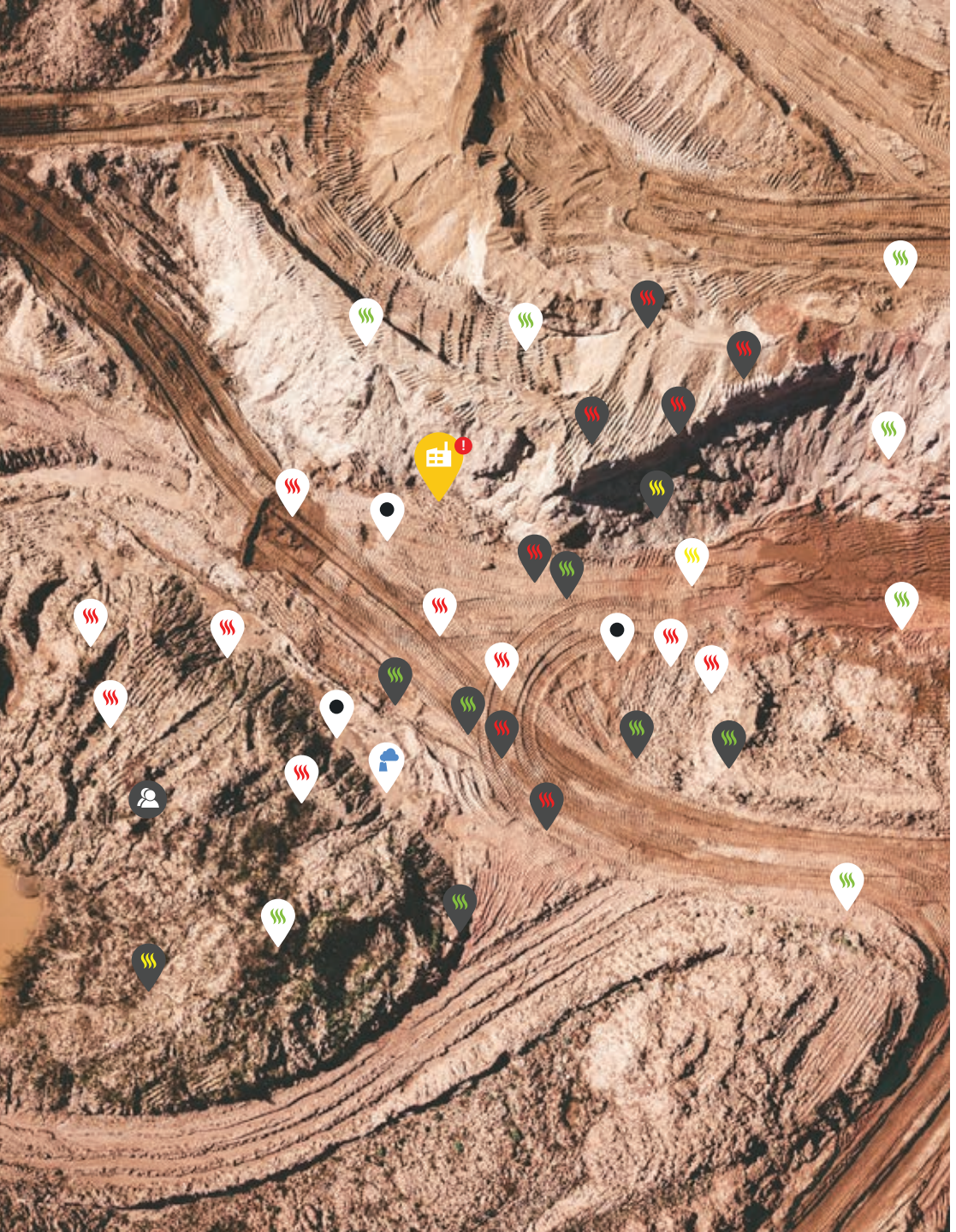
By continuously monitoring the air quality in and around a mine, it is possible to detect and respond to potential health risks and safety hazards, such as elevated levels of toxic gases, dust, and other pollutants. Stationary monitoring devices can provide real-time data on a range of pollutants, such as particulate matter, sulfur dioxide, and nitrogen oxides, allowing mine operators to take prompt corrective action when necessary.

Mobile Monitoring

By equipping drones with the Scentroid DR2000, or outfitting a vehicle with the US20 UrbanScanner, mine operators can quickly and easily survey large areas of a mine, including hard to reach or hazardous areas that may not be accessible by traditional stationary monitoring devices. This information can help to identify areas of high pollution and prioritize pollution control measures. Additionally, mobile monitoring is capable of providing valuable insights into patterns of air pollution in and around the mine, which can be used to develop more targeted pollution control strategies.

Personal Monitoring

Personal safety air quality monitoring devices in mines are crucial for protecting the health and safety of individual workers. These devices can alert them to potential hazards and prompt them to take necessary precautions, such as utilizing respiratory protection or moving to a safer location. Personal safety monitoring devices are particularly important in underground mines, where workers may be exposed to higher levels of toxic gases and other pollutants. These devices can even be used to assess the overall effectiveness of pollution control measures.



Complete Monitoring Solution

The combination of stationary monitoring, drone-based mobile monitoring, and personal safety device monitoring provides a comprehensive 3 tiered approach to air quality monitoring in mines. Stationary monitoring devices provide continuous monitoring of air quality in and around the mine, providing valuable data on the overall level and distribution of pollution. Drone-based mobile monitoring devices offer an additional layer of monitoring, enabling the detection of hot-spots and hard-to-reach areas, along with providing more granular data on the spatial and temporal patterns of air pollution. Personal safety monitoring devices provide real-time data on worker exposure levels, ensuring individual workers are protected from potential health hazards.

By using these 3 types of monitoring devices together, mine operators can identify pollution hot-spots, optimize pollution control strategies, and protect the health and safety of individual workers. This integrated approach to air quality monitoring is essential for promoting sustainable mining practices and ensuring the safety and wellbeing of workers and nearby communities.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STATIONARY MONITOR:

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 (H2S), Sulfur Dioxide (SO2), Ammonia (NH3), Methane (CH4), Carbon Dioxide (CO2), 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.

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 °C without AC system -50 to +50 °C with Heating and AC system
Sample Conditions	-50 to +50°C and 10 – 90% RH without predilution system -50 to 120°C 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


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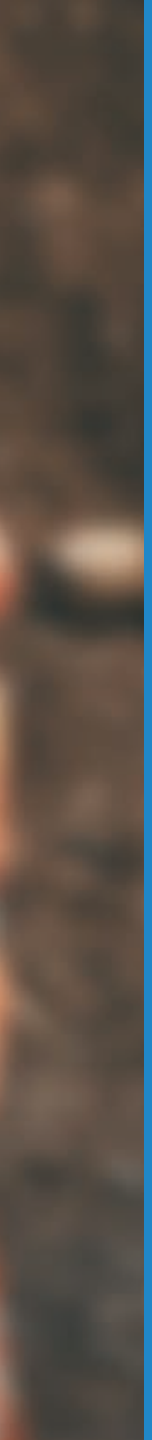
ctair



STATIONARY MONITOR:

CTair Overview

Compact, cordless, easy to use, high accuracy sensing. The CTair revolutionizes the air quality monitoring network industry.

The CTair monitoring station is a fixed unit that collects information from a variety of sensors and presents the data in an easy to understand graphical interface. By applying information collected from multiple data points, the CTair allows the user to gain a complete understanding of the chemical compounds being monitored. It has been designed to be dispatched into a network of CTair units. Due to its lightweight design the CTair unit can easily be installed and mounted to a variety of fixtures.

CTair units work in tandem to predict and collect data for an accurate air quality assessment in a large space. Temperature and humidity compensation utilized by our AI modeler is able to predict pollutant levels to 96% of true concentration. The applications of a CTair unit in a mining operation are limitless.

Specifications

Product Name	Scentroid CTair
Maximum # of Sensors	11 11 (4xEC, 1xCO2, 1xPID, 1xCH4, 1xPM, T, RH, Barometer)
Type of Sensors	PID, NDIR, EC, Laser Particulate counter, Temp, RH, Pressure
Sampling rate	Approximately 1 per minute
Weight	4.5 kg with solar panel
Size	19 x 29 x 14 cm for CTair, 37 x 34 cm for optional solar panel
Power Requirements	Solar power and AC power - 110 - 240 VAC
Battery Only Runtime	36 hours (base model)
LED Indicator	Color-changing LED light displaying unit status
Communication	WiFi, 3G, 4G, LoRa
On-board data Storage	64GB - SD Card for long term continuous logging
Cloud Server	Included by Default, data logging, analysis, alarms, & more.
Temp., Humidity Range	-40 to 40°C, 10 - 90% Relative Humidity (RH)
Device Health	Daily sensor health checks, provides replacement reminders
Design Rating	IP53 casing, securable by cable/pad lock
Calibration	Factory calibration to fully documented procedures in accordance with our ISO 9001 quality management system
Warranty	24 months full warranty for all parts including sensors
Sensor Replacement	Sensor dependent – first 2 years covered by warranty
Mounting	Configurable for wall or pole mount Custom mounting solutions can be created upon request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Sensor2
0000 ppb
Sensor3
0000 ppb
Sensor4
0000 ppb
Sensor5
0000 ppb
Sensor6
0000 ppb
Sensor7
0000 ppb
12:42
25°
62%
PM 1
0000 ppb
PM 2.5
0000 ppb
PM 10
0000 ppb
AQSafe

STATIONARY MONITOR:

AQSafe Overview

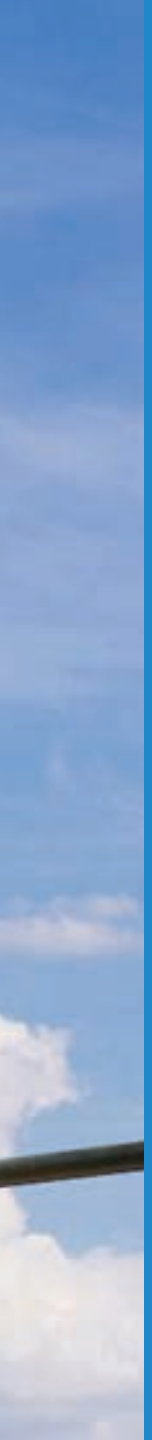
AQSafe indoor air quality monitor observes the air quality of an enclosed space with a wide range of sensors including pressure, temperature, and relative humidity, Our sensor detection ranges from dust (PM1, 2.5, and 10), to Ozone, Carbon Dioxide, temperature, humidity, pressure, and many other chemical compounds found indoors.

The AQSafe features a compact, low profile design that is both easy to install and operate. Not only has it been proven for long term stability, but all sensors have been calibrated and prepared for your space. The AQSafe is your new companion for indoor air quality monitoring, built with labor saving, cost-effective, and health and comfort measures in mind.

The AQSafe features built in software for graphical representation of statistical data, and alarm systems. The touch screen incorporates control over a variety of advanced gas sensor technologies, designed to monitor a wide array of target gases.

Specifications

Product Name	Scentroid AQSafe
Maximum # of Sensors	11 (4xEC, 1xCO2, 1xPID, 1xCH4, 1xPM, T, RH, Barometer)
Type of Sensors	PID, NDIR, EC, Laser Particulate counter, Temp, RH, Pressure
Sampling rate	Approximately 1/s
Weight	860g
Size	220 mm x 200 mm x 50 mm
Screen	Built-in LCD with system status feedback
Communication	WiFi (LoRa Mesh)
Power Requirement	110 v - 240 v Wall Outlet
Cloud Server	Included by Default
Alarm Equipped	Yes
Temperature Range	5 °C to 40 °C
Operational R. Humidity	10 - 90%
Device Health	Daily Sensor health checks and provides sensor replacement reminders as needed
Warranty	24 months full warranty on all parts including sensors
Sensor Replacement	Sensor dependent, first 2 years covered by warranty
Mounting	Recessed backing allows for device to be easily mounted on a protrusion
Noise Intensity	Runs quietly at 7dBA



MOBILE MONITOR:

DR2000 Flying Laboratory

The Scentroid DR2000 flying laboratory is a state-of-the-art drone-based air quality monitoring system that can be used to determine air quality concerns in mining operations. Equipped with a range of sensors, including particulate matter sensors, gas sensors, and meteorological sensors, the DR2000 can quickly and easily survey large areas of the mine and provide accurate, real-time data on air pollution levels.

This data can be used to identify pollution hot-spots, track the movement of pollutants, and evaluate the effectiveness of pollution control measures. The DR2000 is particularly useful for mining operations that cover large areas or have hard-to-reach areas, such as underground mines. The system is also highly flexible, allowing for customization to meet the specific needs of different mining operations.

By using the DR2000 flying laboratory, mining operators can obtain valuable data on air quality concerns in their operations, enabling them to make informed decisions and take effective action to protect the health and safety of workers and nearby communities.

Specifications

Product Name	DR2000 Flying Laboratory
Maximum # of Sensors	11 (4xEC, 1xCO2, 1xPID, 1xCH4, 1xPM, T, RH, Barometer)
Type of Sensors	PID, NDIR, EC, Laser Particulate Counter, Temp, RH, Pressure
Sampling Rate	Approximately 1/s
Sampling Port	Single sampling port with probe > 1 LPM flow-rate
Probe Length	44 cm or 88 cm (switchable)
Weight	520 - 640g
Size	23 cm x 10.8 cm x 10.3 cm
Time in Flight	Drone dependent, optimal is 30 minutes
Communication	LoRa, GSM/WiFi
On-Board Data Storage	16 GB SD Card
Cloud Server	Included by Default
Ground Station	10” tablet with LoRa communication and DRIMS2 Software
Software	DRIMS2 system (ground-station + web client)
Temperature Range	5 °C to 40 °C
Operating Humidity	10 - 90%
Calibration	Auto-zero before flight. Can be optimized using GD600
Warranty	24 months full warranty to all parts including sensors
Sensor Replacement	Sensor dependent - first 2 years covered by warranty
Mounting Hardware	Customizable mounting lid - default mounting for Inspire 2 drone. Triple mounting safety redundancy to the drone (mounting screws, counter-weight ties, zip ties)sensors
Location and Altitude	GPS based with barometric pressure augmentation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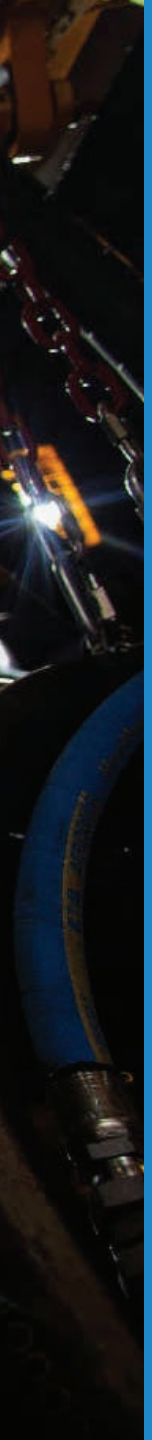
0.154
ppm
0.239
0.188
H2S
H2S
PMD100



PERSONAL SAFETY MONITOR:

PMD100 Personal Safety Monitor

Using the Scentroid PMD100 personal safety air quality monitoring device equipped with a visual and an audible alarm system offers several benefits for workers in a mining operation. Firstly, the visual and audible alarm systems can alert workers when air quality levels are unsafe, helping them to take immediate action to protect themselves.

For example, if the device detects high levels of dust, gas, or other pollutants, it can trigger an alarm to warn the worker to move to a safer location or put on additional protective equipment.

Secondly, the device can provide workers with real-time data on their personal exposure levels, helping them to monitor their own safety and avoid exposure to harmful pollutants. This can be particularly important in underground mining operations, where workers may be exposed to high levels of pollutants in confined spaces.

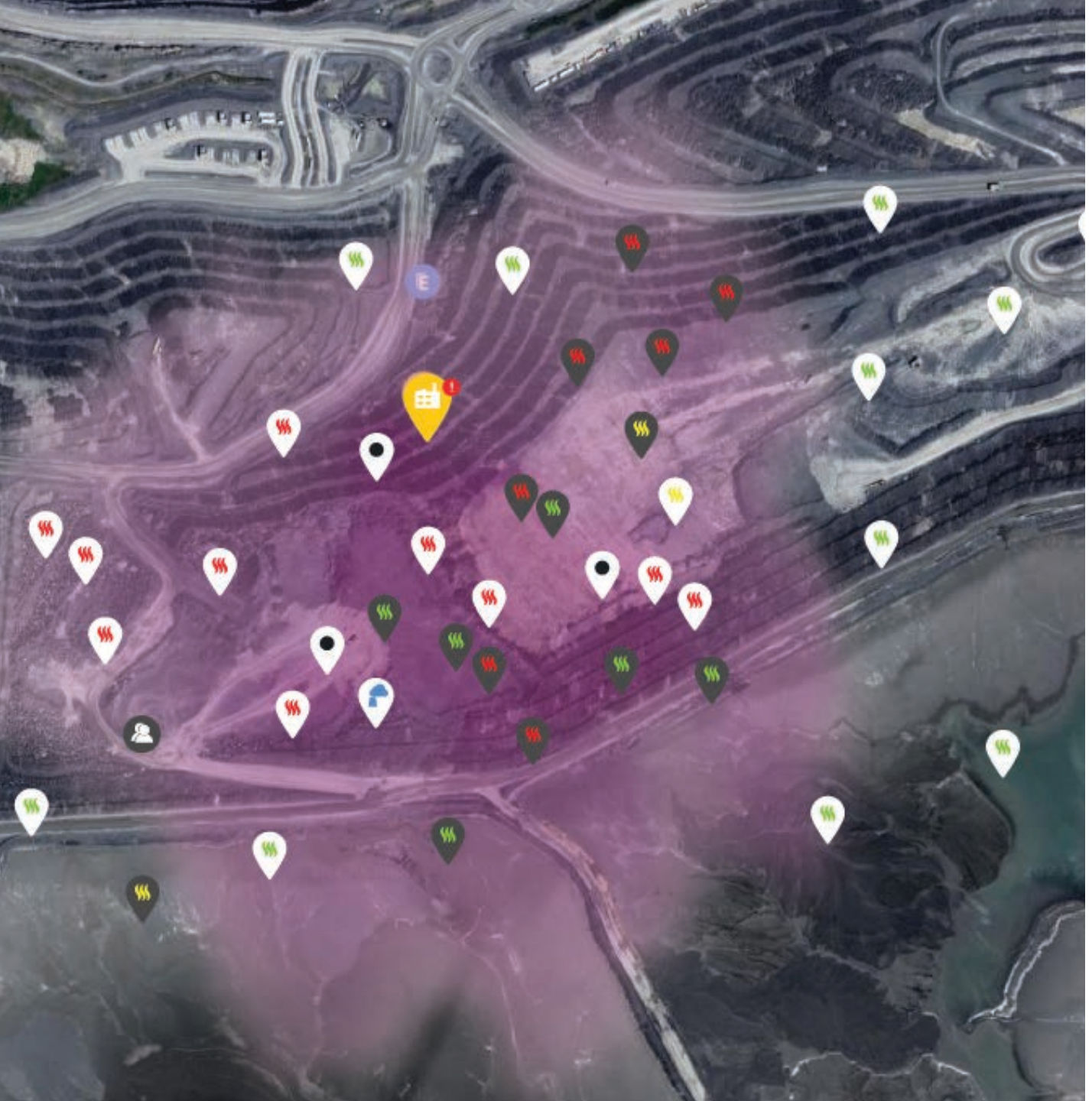
Finally, the Scentroid PS100 can help mine operators to identify areas where air quality may be a concern and take action to improve conditions. By providing workers with a tool that allows them to monitor their own safety and take action when necessary, mine operators can promote a culture of safety and improve overall worker health and wellbeing.

Specifications

Product Name	Scentroid PMD100 Personal Monitoring Device
Maximum # of Sensors	2
Type of Sensors	2x EC, Temperature, Relative Humidity, Ambient Pressure
Sampling Rate	Continuous gas sampling, T & RH & P every 5 minutes
Weight	< 220 g
Size	6 x 7 x 3 cm
Screen Dimensions	24 x 47 mm
Communication	Bluetooth low energy
Power Requirement	Replaceable Lithium Battery
Typical Lifespan	1 working year
Ground Station	Included by Default
Cloud Server	SIMS3 - included by default
Alarm Equipped	Audio level 95 dB, Visual: LED RED strip surround
Haptic	Vibration feedback
Temperature Range	-20 °C to 55 °C
Relative Humidity	5 - 95%
Casing	IP54
Warranty	24 months full warranty to all parts including sensors
Sensor Replacement	Sensor dependent - first year covered by warranty
Back Clip	Mountable using mounting bracket/stand, alligator clip to connect to clothing
Features	SOS signal, administrator message broadcast and receipt, approximate localization within a facility (indoor and outdoor), fall detection with user intervention for false positive

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!

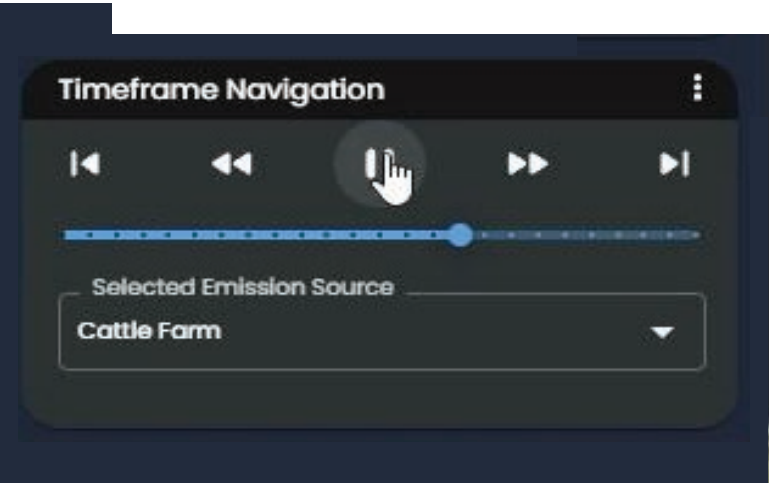
User Settings

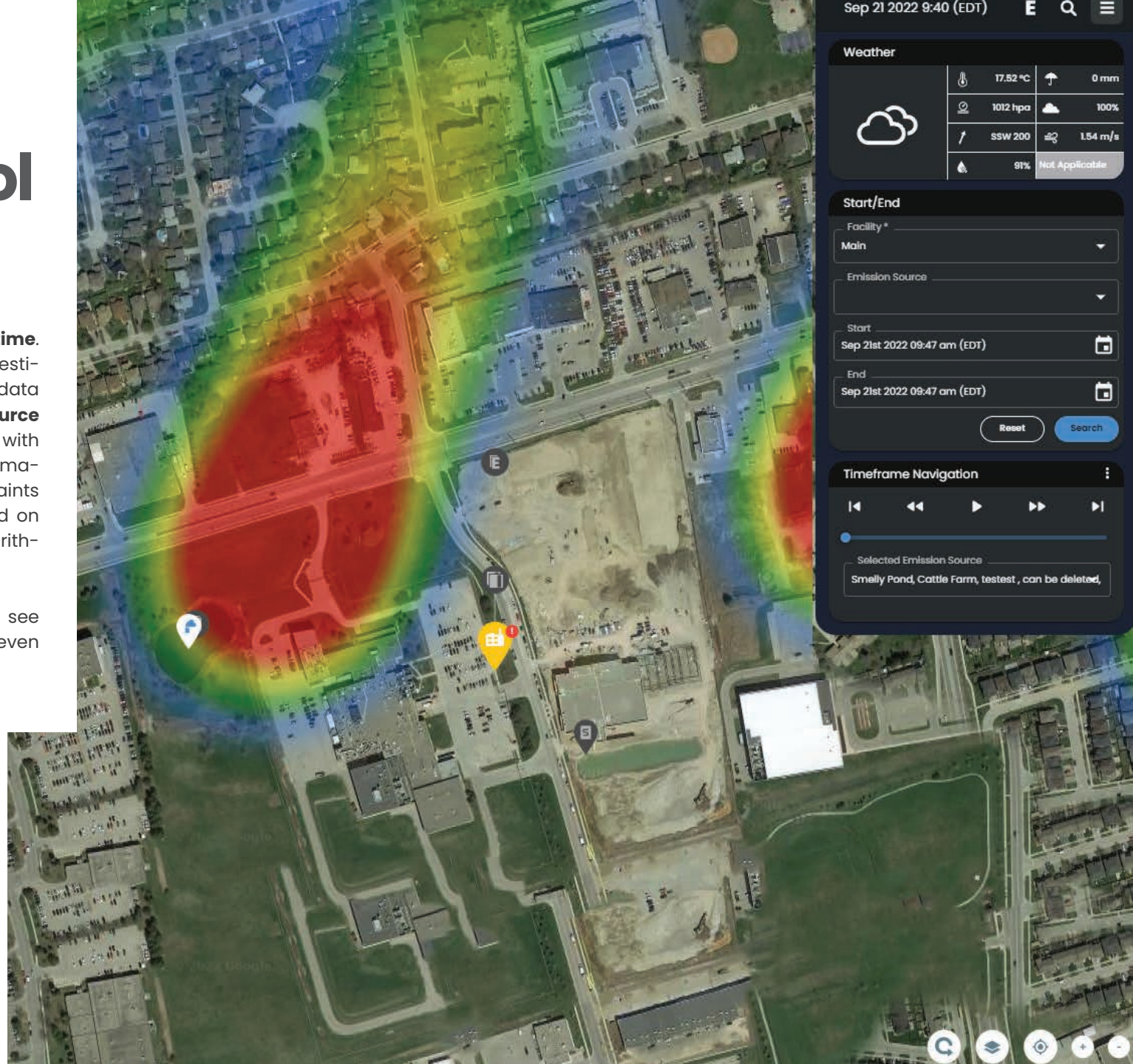
The system is further supported by a robust settings component, allowing the quick change of user permissions, access privileges, notifications settings and more, all in one convenient window!

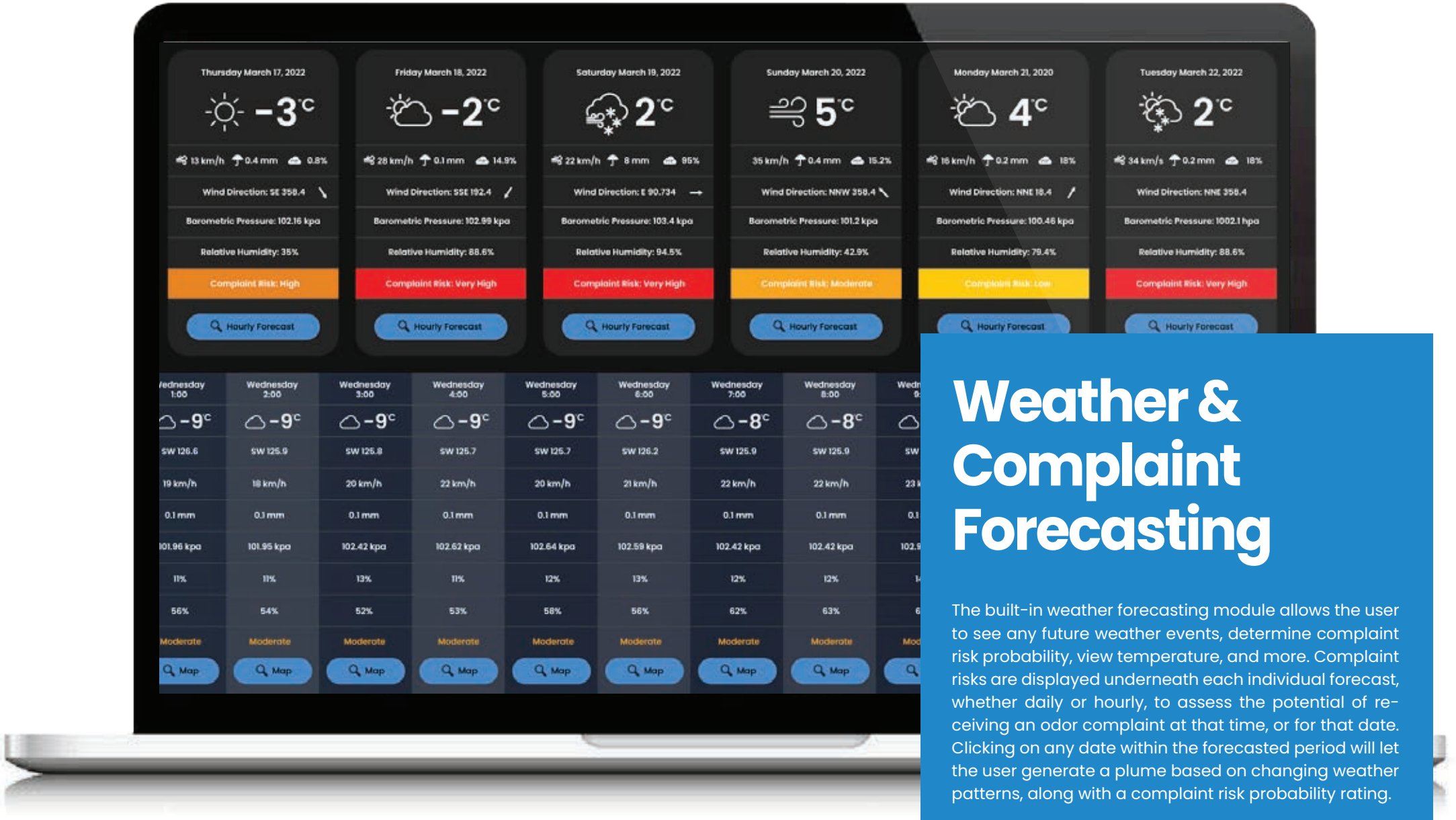
Timeline Control & Navigation

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.

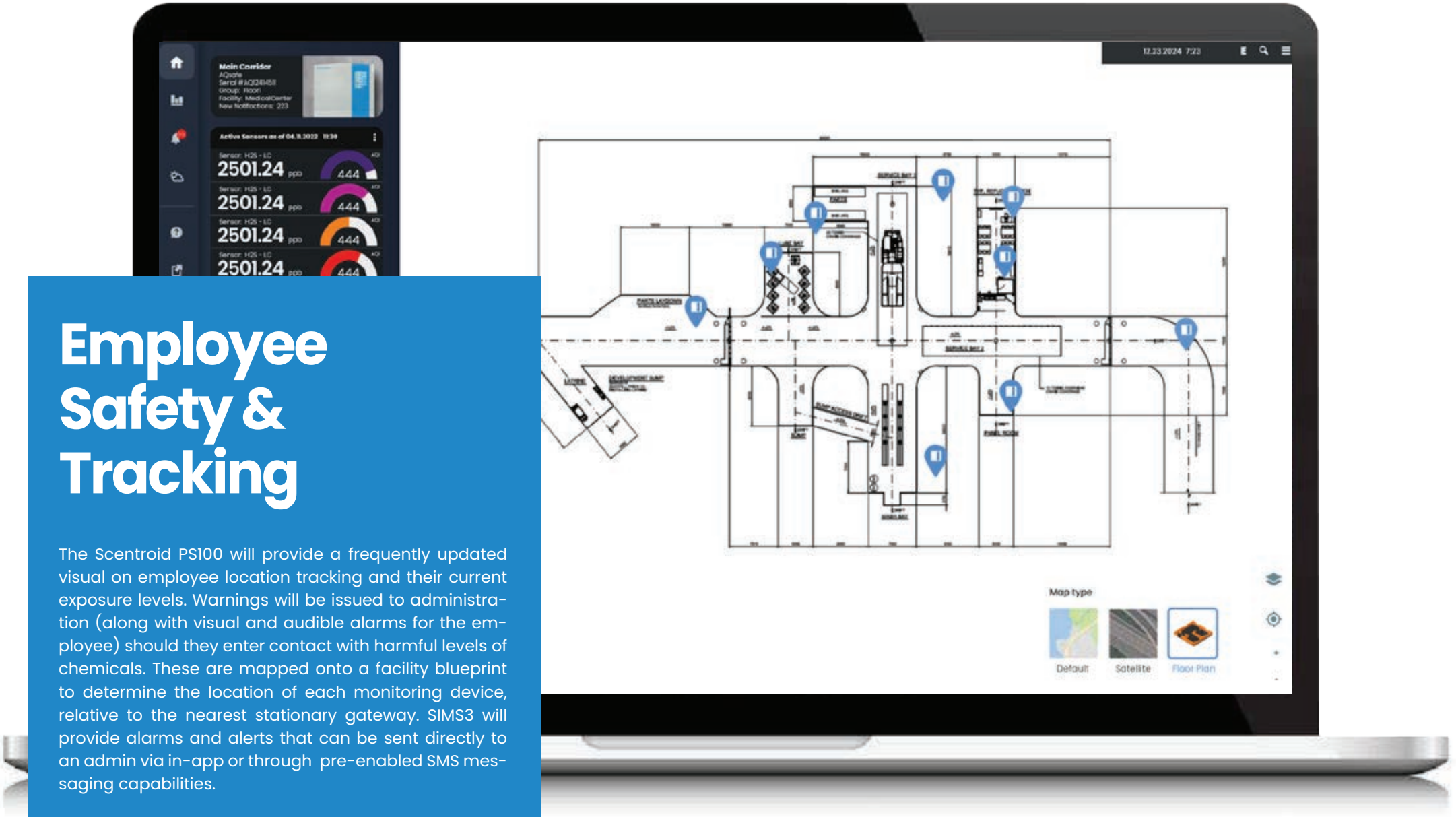






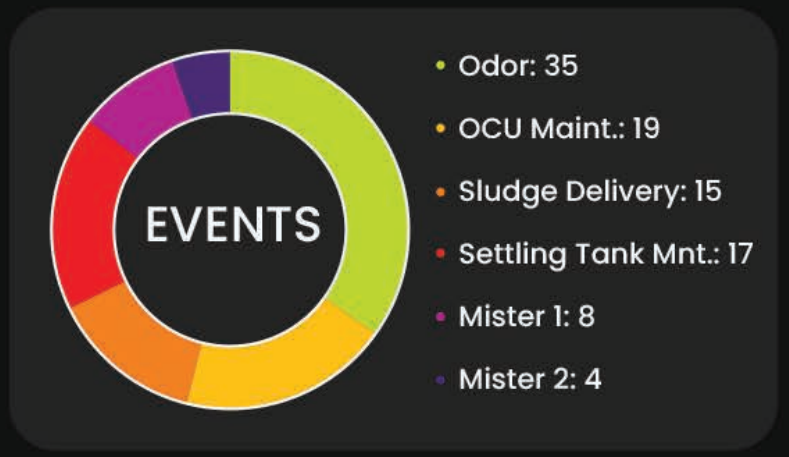
Weather & Complaint Forecasting

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.



Employee Safety & Tracking

The Scentroid PS100 will provide a frequently updated visual on employee location tracking and their current exposure levels. Warnings will be issued to administration (along with visual and audible alarms for the employee) should they enter contact with harmful levels of chemicals. These are mapped onto a facility blueprint to determine the location of each monitoring device, relative to the nearest stationary gateway. SIMS3 will provide alarms and alerts that can be sent directly to an admin via in-app or through pre-enabled SMS messaging capabilities.



46
New Events

23
Hidden Events

29
Read Events

Event Notification List

Status	Type	Registrant	Event Time	Justification	Correlation	Description
New	Odour	SR: Stanley Homes	2022.06.14 7:30 - 14:25	Manual Not Justified	View Correlation	Stanley Homes residences, creat sensitive receptor, repeated com
New	Alarm: H2S	System	2022.06.16 14:05 - 15:30	Manual justified	None	Exceedance alarm triggered 14 tin consecutively within timeframe.
New	OCU Maint.	Benjamin	2022.06.16 15:00 - 17:00	Auto Justified	View Correlation	Scheduled maintainence
New	OCU Maint.	Benjamin	2022.06.17 5:00 - 7:30	Auto Justified	View Correlation	Emergency maintainence
New	Sludge Del...	Benjamin	2022.06.18 18:30 - 20:30	Auto Justified	View Correlation	Scheduled process.
New	Settling Ta...	Benjamin	2022.06.21 8:45 - 11:00	Auto Justified	View Correlation	Scheduled weekly maintainence
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.
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 y
Read	Odour	EXT: Paolo	2022.06.21 10:20 - 13:20	Auto Justified	View Correlation	Automatically provided by: Neighborhood Odor Watch App

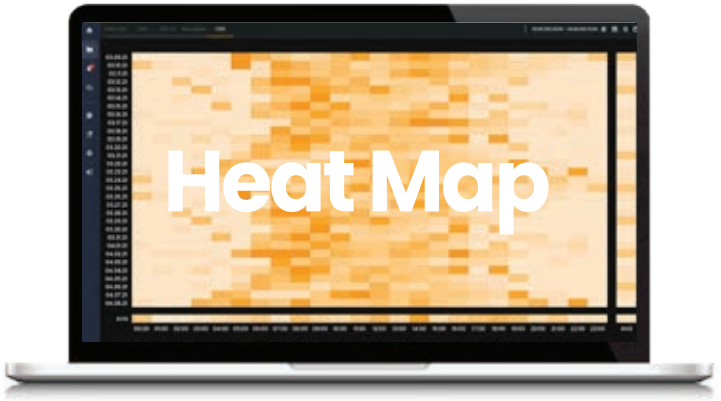
Event & Notification Log

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.

SMS 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**.



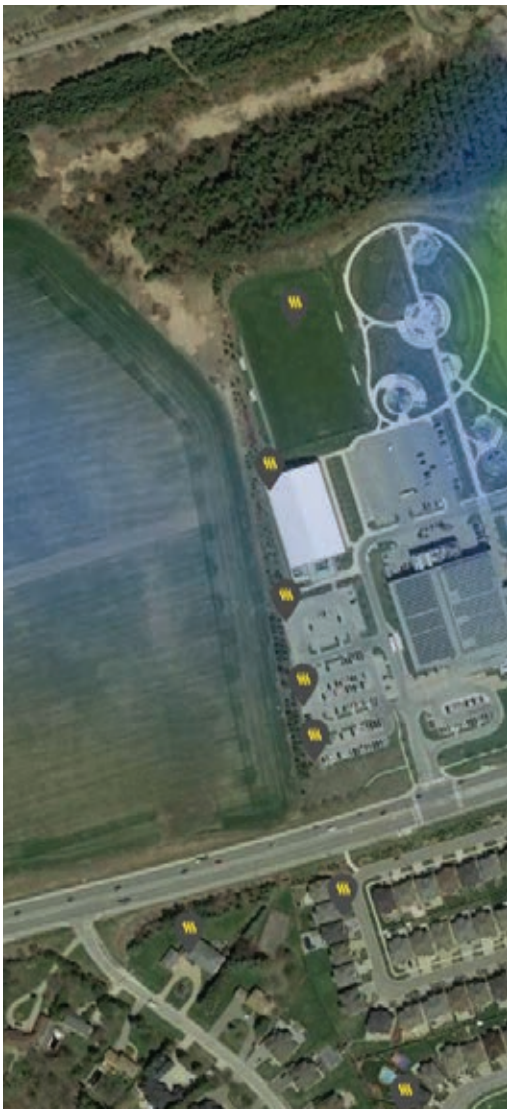
For more details on our SIMS3 platform, please see our **SIMS3 Brochure** available at **www.Scentroid.com**

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 temporal 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.

Automated Reporting

Our SIMS3 reporting auto-generated report module will generate visual reports at a user-defined frequency. Users will be able to schedule weekly, monthly, or annual reports. Once generated, reports will be sent to the user, and they can be downloaded within our reports module.



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

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