# SENSIT

INNOVATIVE DETECTION SOLUTIONS

# SENSIT

## PURPOSE

To protect life, property and our environment from hazardous gases.

## MISSION

Delivering **innovative, life-protecting products** and **best-in-class service** to our clients while keeping **our family** atmosphere and values.

## VISION

**Globally,** be the **first choice** for gas leak detection solutions.

# SPOD

VOC Emissions Monitor

## RAMP

Remote Air Quality Monitoring Platform

Ultrasonic Anemometer

PID

ECHEM and
IR Sensors

PM Module

| Product Description |
|---|
| Real-time continuous VOC monitoring |
| Easy and flexible deployment on fencelines or tripods |
| Solar powered with battery backup |
| Cellular data communications (short or long range wireless available) |
| Flexible data delivery (SENSIT Connect or your own endpoint) |
| Expandable – Can accommodate PM2.5 and other potential gases |
| Anemometer optional |
| Remote and VOC concentration-based canister triggering |
| On-board SD storage for backup |

| Product Description |
|---|
| Continuous pollutant monitoring |
| 5 gas (a-la-carte), PM2.5, and T/RH |
| Selection from range of electrochemical sensors |
| Solar powered with battery backup |
| Cellular data communications |
| Flexible data delivery (SENSIT Connect or your own endpoint) |
| Expandable – Can accommodate additional gases |
| On-board SD storage for backup |
| Anemometer optional |

# SUMMARY OF QA/QC PROCEDURES

| QA/QC Type | ✓, X, N/A | Description |
| --- | --- | --- |
| Check of individual components | ✓ | All sensor hardware that leaves our facility are checked for functionality |
| Other hardware QA | ✓ | Hardware QA on various test points around the circuit board to make sure subsystems are functioning |
| Sensor software QA | ✓ | Make sure the software running on the instrument is reading the sensors correctly, and that the values are within limits set within the software |
| Lab testing of sensors | ✓ | All devices are run inside the laboratory and calibrated at zero and a single span point. |
| Field testing of sensors | ✓ | All devices are operated outdoors in the grounds at our facility for 2 days to ensure no significant environmental drift. |
| Mathematical QA of individual data points | X | SENSIT Connect allows customers to set limits on the data coming in |
| Mathematical QA of individual sensors | X | SENSIT Connect does not save individual sensor issues or work records |
| Mathematical network-wide QA | X | No QA checks on network wide health.  Has done stuff in the past when customers request specific checks |
| Data fusion QA | N/A | Not by default – has implemented when requested |
| Mathematical QA using information other than pollutant of interest | N/A | Not by default – has implemented when requested |
| Aggregator acceptance criteria | N/A | |
| Other? | | |

# THE ENVIRONMENT MATTERS!
## for QA/QC of sensor data

**Goal:** Collect as accurate data over as long a period as possible and to detect when data becomes inaccurate

**If I were deploying sensors....**

| Question | Action |
|---|---|
| What would I do to ensure sensors are reporting correctly? | • Bump test every device at multiple concentrations in the laboratory before deployment.<br>• Can be as simple as higher and lower concentration (depends on the level of data you would want). |
| How do I know if the sensor is reading correctly? | • Do a pre-deployment at a site where bump tests are possible. Potentially a collocation with a known good device/data.<br>• Periodically bump test the device when deployed, when possible. Start more frequent and move towards lower frequency.<br>• Keep a device at a "control" and accessible location<br>• Know your environment, and know what data is reasonable. |
| How do I spot temperature and humidity driven phenomena? | • Typically, temperature effects in the sensors are not linear. You would see large spikes upwards or downwards if the compensation is not working. |

# THE ENVIRONMENT MATTERS!
## for QA/QC of sensor data

**Goal:** Collect as accurate data over as long a period as possible and to detect when data becomes inaccurate

## If I were deploying sensors....

| Question | Action |
|---|---|
| What metrics should I look at to ensure my sensor is behaving? | • Request raw debug information from the supplier. For SENSIT devices, on the SD card and within the verbose output, you can find the raw readings (mV) of all devices<br>• Look beyond the PPM reading. Performance analysis on the variance and noise of the sensor. Typically, when sensors break, the noise of the sensor changes drastically (i.e., just showing 0) |
| How do I correct for long term drift of the device? | • In many applications, we apply a long-range moving average subtraction from the raw signals to eliminate long lasting signals.<br>• Be careful about the moving average you are subtracting – if you are interested in effects that are daily, average more than daily. |
| How do I best help the supplier troubleshoot/debug? | • Provide all debug files from the SD card – this will help us figure out what the problem is. |

*Protecting life, property, and the environment from hazardous gases*

SENSIT Technologies