



# Demand-Based Ventilation for Laboratories

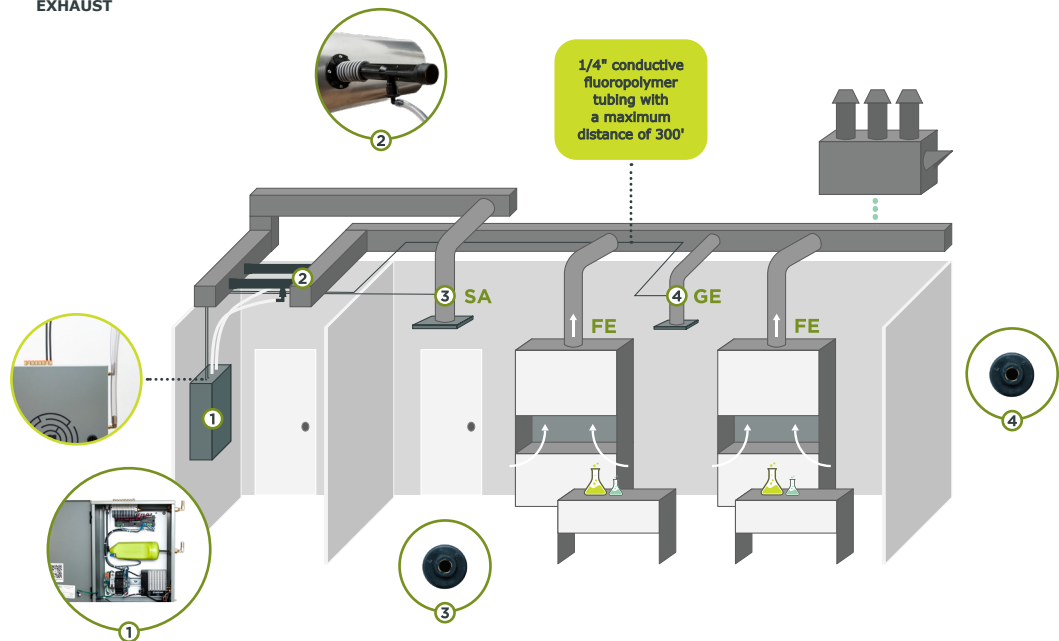


Traditionally, laboratories are designed with a fixed number of air changes per hour (ACH), typically between six and 12, which results in over-ventilation. According to ANSI Z9.5 2022, the ventilation rate may vary based on measurements of specific contaminants at selected locations in the room or in the exhaust duct connected to the room.

AntrumX™ is a centralized sensing solution that uses duct static pressure to draw air samples from each individual zone back to the sensor pack, which is located in the monitoring panel in a mechanical room. This design allows for a highly scalable infrastructure given the ability to upgrade and calibrate a single sensor pack in under one minute.

## SAMPLE INSTALLATION

- ① **MONITORING PANEL**  
Contains the sensor pack.
  - ② **AIR ACCELERATOR**  
Uses building differential pressure to create a vacuum.
  - ③ **1" DUCT PROBE – SUPPLY AIR PICKUP**  
Air samples are drawn from the probe to the monitoring panel.
  - ④ **1" DUCT PROBE – GENERAL EXHAUST**
- SA SUPPLY AIR**  
**GE GENERAL EXHAUST**  
**FE FUME HOOD EXHAUST**



Reducing ventilation in laboratories and vivariums based on real-time sensing offers opportunities for energy conservation. This approach can safely reduce lab air change rates to as low as two ACH when the lab air is “clean” and the fume hood exhaust or room cooling load requirements do not require higher airflow rates. Research by Sharp (2010) showed that lab rooms are on average “clean” of contaminants in excess of about 98% of the time.



## Benefits of Antrum’s Centralized Sensing

### Safety

With AntrumX, you’re able to achieve safe and accurate control of the lab’s ventilation because the same sensor is used to analyze both supply air and exhaust air, canceling sensor drift, and guaranteeing a constant differential.

### Energy Savings

Labs require 100% OA and spend upwards of 40% of their energy on ventilation. The AntrumX platform provides lab owners the opportunity to save energy by optimizing their ventilation while also ensuring a safe and healthy lab environment.

### Scalability

Our patented sensor pack was designed with the future in mind. We have the ability to increase our monitoring capabilities at a fraction of the cost as your lab grows and changes. With a one minute replacement of the sensor pack you can upgrade the sensing capability for up to 16 unique zones.

### Maintainability

AntrumX uses only 6% of the number of sensors when compared to a solution that utilizes discrete sensors, and is unlike other centralized sensing solutions:

| Antrum  | Competitors   |
|---|---|
| All air samples are removed from the building utilizing the exhaust air stream  | All air samples are dumped into the mechanical room                               |
| Valves are in the monitoring panel and are continuously leak tested             | Valves are buried above ceiling tiles   |
| Uses existing building static pressure to move air samples to panel             | Requires loud and prone-to-fail primary/standby pumps to move air                 |
| No mandatory subscription   | Subscription required   |
| Sensor Pack replacement calibrates all points for all zones in under one minute | Each Sensor is replaced/calibrated individually by a factory-certified technician |
| Single-point power  | Pumps, control valves, monitoring panel, and controller each require power        |
| Multiple TVOC sensors with dedicated ammonia sensor                             | No dedicated ammonia sensor   |
| Ability to sense 12 different parameters including formaldehyde and ammonia     | Limited sensing capabilities  |