Room Airflow/Pressure Control Devices and Control Systems

All laboratories should contain a fully integrated laboratory variable air volume (VAV) airflow/pressure control system to control room temperature, ventilation rate and room pressurization. The control system should constantly monitor the amount of supply and exhaust air for the laboratory rooms, and regulate the flow to maintain a net negative pressurization.

UC Practice

The control system shall allow easy, remote adjustment of laboratory airflow, and shall be sufficiently flexible to provide timed schedules, local override, reduction of setbacks, or increase of room ventilation if needed for proposed future laboratory operations.

UC Practice

The laboratory VAV control system shall perform the following functions:

- Monitor the hood sash opening and control the cfm volumetric flow rate of that hood to maintain a constant face velocity.
- If an unoccupied mode of operation is desired, it shall be controlled by a room occupancy (not a hood occupancy) sensor, and shall supply not less than 60% of occupied operational levels of volumetric flow rate.
- Monitor the fume hood exhaust airflow, the general exhaust airflow and the supply (makeup) airflow, and maintain a net negative airflow so the volume of fresh air entering the space is equal to 90% of the maximum exhaust airflow. Alternatively, a direct pressure control may be used to maintain the laboratory negative pressure at \(0.02\) to \(0.05\) wc relative to nonlaboratory spaces.
- Delay throttling back room air supply for 10 (or more) minutes after the room occupancy sensor no longer detects people in the room (see above).
- The fume hood motion sensor time delay (from attended mode to standby mode) shall be 5?10 minutes to alleviate the nuisance noise and wear and tear from opening/closing the VAV venturi valve/control device too frequently.

UC Practice
The associated laboratory airflow control system shall be able to maintain the average fume hood face velocity at the set point specified by the University, typically 100 fpm.

See the 'Hoods - Face Velocities' subsection of this chapter for face velocity specifications.

UC Practice
8 CCR5154.1 (c)

Fume hood controls shall be arranged so that shutting down one fume hood for maintenance will not reduce the exhaust capacity or create an imbalance between exhaust and supply for any other hood manifolded to the same system.

UC Practice

Redundant airflow monitoring devices may be necessary when airflow direction is critical, such as radiological Type III workplaces.

UC Practice

All fan controls for the laboratory VAV control system and hoods shall be stable, reliable, and easily maintained, and readily accessible to facility management, maintenance, and emergency personnel. Sensor measurement range, accuracy, and positioning shall accurately reflect system performance.

UC Practice
NFPA 45 Chapter 6-10.3

Per NFPA 45, fume hood exhaust fans shall not be shut down automatically when a smoke-alert signal is detected in the supply air system.

UC Practice
NFPA 45 Chapter 6-10.3