

Shut-off Valves

Many spaces have constant volume point exhaust devices, such as snorkels, canopies, and biosafety cabinets that are not used all of the time. Using a shut-off Valve on these devices to control exhaust saves energy by reducing the exhaust to zero when the devices aren't used.

General Exhaust Shut-off

Many spaces also use a general exhaust (GEX) device to provide additional exhaust capacity. However, when additional exhaust is not required, this device wastes energy, since it has a minimum non-zero exhaust value. When a shut-off Valve is used instead of a standard exhaust valve, the Phoenix Controls system automatically drives the valve to the shut-off position when the required exhaust is satisfied by other exhaust devices, and maintains room pressurization.

Fan Static Reset

Variable Air Volume (VAV) systems are dynamic by design. During low load conditions, a constant static fan system will develop more static pressure than is necessary to deliver the lower air volumes and therefore unnecessarily wastes energy. With fan static reset, energy is saved by reducing the static pressure setpoint until the "worst case" space is satisfied. A pressure sensor on the Venturi valve enables the Building Management System (BMS) to accurately reset the fan static setpoint. As the building use changes, the BMS resets the static pressure setpoint accordingly.

Phoenix Controls

Founded in 1985, Phoenix Controls is a recognized leader in the design and manufacture of precision airflow control systems for use in critical room environments. Our customers include the leading pharmaceutical companies, universities, hospitals, government research facilities and global corporations. We offer innovative airflow control solutions that combine unparalleled safety and performance with value and energy savings.

The Phoenix Controls Quality Management System is registered to ISO 9001:2008.



ensuring environmental integrity

Experience the Most Energy-Efficient Airflow Control System

With the rising cost of energy and increased airflow demands of today's research or healthcare facility, choosing the correct controls system is more important than ever. Saving energy is not a new concept at Phoenix Controls. In fact, we have been doing it for more than 25 years.

Phoenix Controls offers a wide range of energy-saving products to address your present and future conservation needs in any critical environment. Combine these products and applications to create the most efficient airflow control system for your facility by:

- Lowering air change rates based on air quality
- Eliminating wasted energy from unoccupied fume hoods
- Recirculating exhaust air safely
- Implementing efficient unoccupied building settings
- Shutting off exhaust to unused devices
- Resetting fan static pressure based on dynamic conditions

Operational costs of once-through air systems

Currently, the cost to condition and move one cubic foot per minute (CFM) of air in a 100% exhaust system ranges from \$5 to \$8 annually, depending on the region. Every CFM of air is valuable; wasting even 10,000 CFM results in as much as \$80,000 in excess utility costs.

Saving or reducing precious conditioned air saves money immediately, as shown below. This table summarizes the relative energy savings and return on investment required for energy-saving products from Phoenix Controls.

ENERGY SAVING OPTION	SAVINGS	SIMPLE PAYBACK*
INDOOR AIR QUALITY (IAQ) CONTROL	\$\$\$	< 2 YEARS
USAGE BASED CONTROLS®	\$\$\$	< 2 YEARS
OCCUPANCY CONTROL	\$\$\$	< 1 YEAR
FUME HOOD HIBERNATION	\$\$	< 2 YEARS
ENERGY WASTE ALERT	\$	< 1 YEAR
SHUT-OFF VALVES	\$	< 2 YEARS
GENERAL EXHAUST SHUT-OFF	\$	< 2 YEARS
FAN STATIC RESET	\$	< 2 YEARS

\$\$\$ = \$100,000 \$\$ = \$20,000-100,000 \$ = \$20,000
BASED ON A 100,000 CFM SYSTEM

*Assumes incremental Phoenix Controls costs to achieve the energy savings.
Other equipment may be required.



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Indoor Air Quality Control

Phoenix Controls’ systems allow you to take an input from an indoor air quality (IAQ) monitoring system, and vary the air change rate and provide recirculated exhaust while maintaining room pressurization accurately.

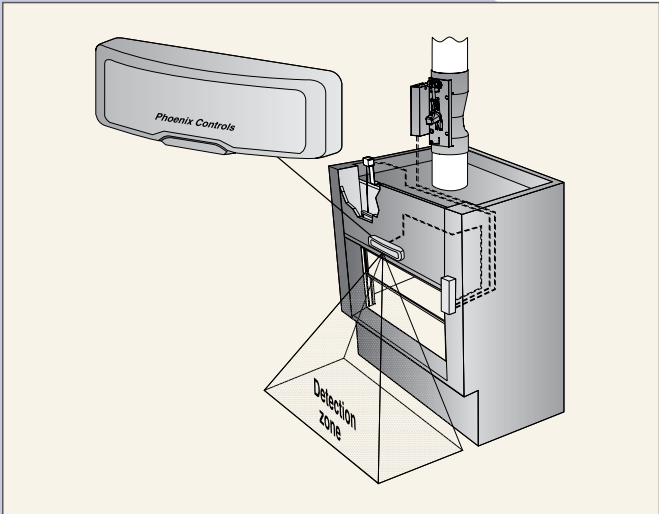
This method reduces the air change rate when the IAQ monitoring system determines that the room air is clean and free of contaminants. If any contamination is measured, the Phoenix system responds immediately to increase the airflow and purge the space.

In addition, with IAQ control, you can recirculate a portion of the room exhaust when the air is deemed clean. When contamination is detected, the Phoenix Controls system immediately shuts off the recirculation and returns to 100% outside air.

Usage Based Controls®

Many studies have shown that fume hoods are typically used for only about one hour a day in short segments and that fume hoods safely contain fumes at lower face velocities when unoccupied.¹ Usage Based Controls® (also known as UBC® solution) is a patented controls method that uses these two important concepts to ensure safety and save energy.

With the fastest response time in the industry (less than one second), the UBC solution works by ensuring safe operating conditions at different airflow levels, based on a user’s presence at the fume hood. The system determines usage by sensing the presence of a person in a well-defined detection zone in front of the hood. When no one is present inside the detection zone, the system sets the airflow face velocity to a safe standby level—typically 60 feet per minute (fpm) (0.3 m/s). When the user enters the detection zone, the system instantly responds (within one second) to increase the face velocity to a safe in-use level—typically 100 fpm (0.5 m/s).



Occupancy Control

With the occupancy control function, configure a space to operate in either occupied mode when users are present or in unoccupied mode when they’re not. Use this function to reduce ventilation rates and relax temperature control criteria when the space is not in use, resulting in significant energy savings. Also configure different sets of minimum ventilation, cooling and heating setpoints. Options are available to override an unoccupied state if a user enters a space set to unoccupied to temporarily set it to occupied temperature and ventilation settings.

Fume Hood Hibernation

Current laboratory standards² recommend a minimum fume hood exhaust when a hazard is present within a fume hood. However, this minimum exhaust can be as high as several hundred CFM and is not needed when no hazards are present.

With the fume hood hibernation³ option from Phoenix Controls, you can reduce a fume hood’s minimum exhaust when no chemicals are present within the hood. When the fume hood’s exhaust air is reduced, less costly conditioned air needs to be supplied into the space.

The hibernation function is performed simply and effectively through the fume hood controls so that safety is ensured. Any sash movement automatically reverts the fume hood to standard operation. No costly and difficult duct changes or manual balancing dampers are required. All fume hood information is also integrated to the building management system (BMS) for monitoring and control.

Energy Waste Alert

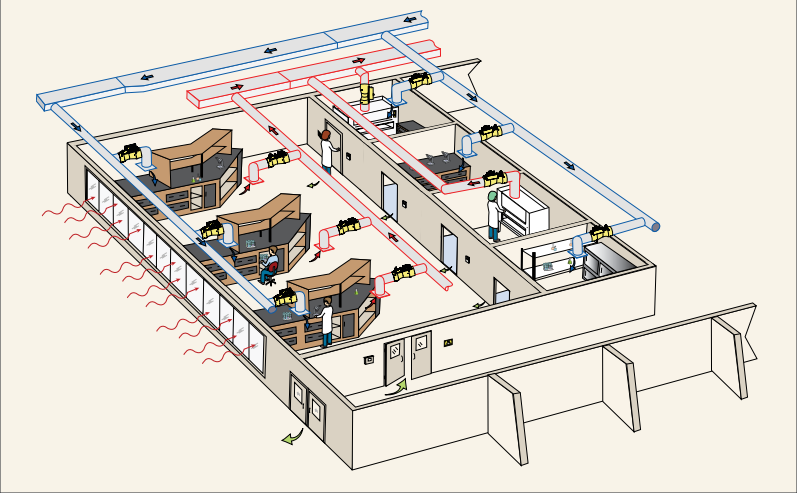
In a variable air volume (VAV) laboratory, the best and easiest method to reduce energy usage and ensure safety is to fully close the hood’s sash when it isn’t in use.

The energy waste alert reminds lab users to close their sashes with local audible and visual notifications. These alerts are activated when users leaving the laboratory at the end of the day turn off the lights in their research spaces but forget to close their sashes.

¹ASHRAE CH-99-9-1, “Containment Testing for Occupied and Unoccupied Laboratory Chemical Fume Hoods”
²ANSI/AIHA Z9.5-2010
³Patent Pending

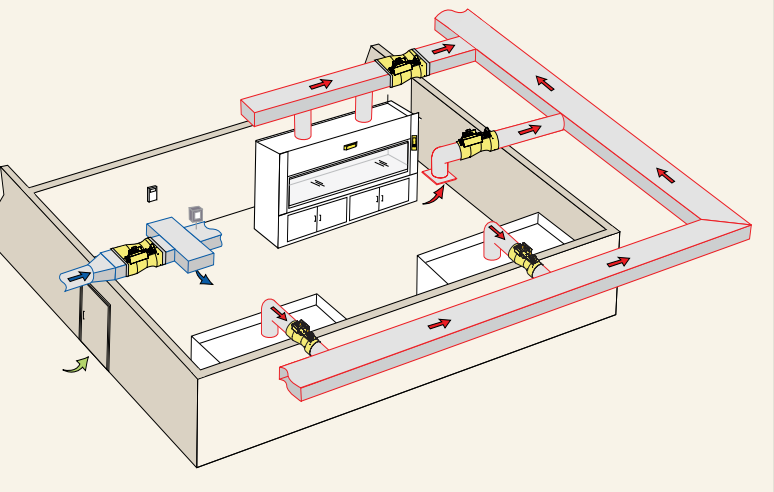
Typical Room Diagrams

Interdisciplinary Research Labs

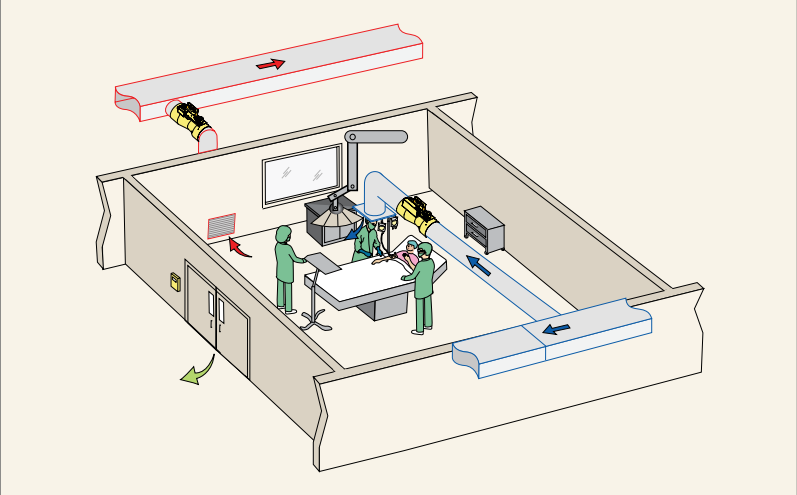


- IAQ Control
- Usage Based Controls
- Occupancy Control
- Fume Hood Hibernation
- Energy Waste Alert
- General Exhaust Shut-off Valve
- Fan Static Reset

Wet Chemistry Labs



Operating and Procedure Rooms



Applicable Energy Saving Options

- IAQ Control
- Occupancy Control
- Fume Hood Hibernation
- Energy Waste Alert
- Shut-off Valve
- Fan Static Reset

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