

INDOOR AIR QUALITY SOLUTIONS

Improving comfort and
productivity through innovation



LENNOX
Innovation never felt so good.™



YOUR HVAC SYSTEM CAN HELP IMPROVE INDOOR AIR QUALITY—IN MORE WAYS THAN ONE

Indoor air quality (IAQ) is becoming an increasingly important factor in building design and management. Good IAQ can help improve the health and productivity of employees, decrease absenteeism and visits to school nurses, increase learning and performance levels for students and create a more positive experience for your customers.

Today's HVAC equipment can help improve IAQ by going beyond heating and cooling the space—it can also help improve humidity levels and reduce or eliminate contaminants. Lennox offers a variety of options and solutions that address IAQ issues. In addition, many of these options are designed to minimize the impact of escalating energy costs, providing you with an efficient and effective IAQ solution.

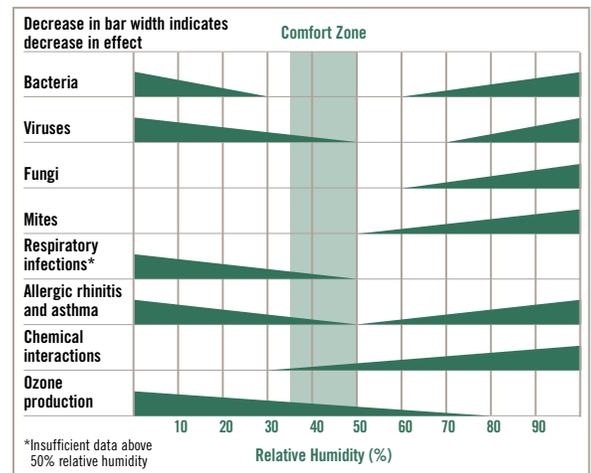
Improving IAQ includes three major components

Creating a better indoor environment requires controlling temperature, humidity and contaminants—and there's a Lennox® system to meet your specific needs.

Options for controlling:

- **Temperature**—Lennox provides a wide range of thermal comfort control designed to achieve a low total cost of ownership, including the energy-efficient Energence® rooftop units.
- **Humidity**—The patented Humiditrol® dehumidification system removes moisture based on relative humidity levels, not temperature. Lowering the amount of moisture in the air helps prevent mold and bacteria growth.
- **Contaminants**—Lennox offers high-efficiency filters and germicidal lights to help control the three classes of air contaminants: particles, bioaerosols and odors/chemical vapors. Fresh-air ventilation can also reduce air contaminants. Lennox offers economizers with demand control ventilation and various energy recovery systems for efficient operation.

OPTIMAL COMFORT ZONE



Source: ASHRAE, adapted from Sterling et al., 1985

Particles	Pollen, dust mites, dirt and pet dander	Particles are any substance measuring less than 100 microns in diameter.
Bioaerosols	Bacteria, viruses, mold spores and fungi	Microscopic living organisms that grow and reproduce in warm, humid places.
Odors/chemical vapors	Tobacco smoke, chlorine, cleaning supplies and paints	Air contaminants in the form of gases.

Sources: William J. Fisk, P.E. "How IEQ Affects Productivity." ASHRAE Journal. May 2002: pages 56-58
 Indoor Air Quality Tools for Schools Program: Benefits of Improving Air Quality in the School Environment, U.S. Environmental Protection Agency, October 2002

Indoor air quality at a glance:

Poor indoor air quality (IAQ) can affect the health, comfort and productivity of any organization.

Strategies to improve IAQ include monitoring air quality, eliminating sources of pollutants, ventilating the area and cleaning the building thoroughly.

The U.S. Environmental Protection Agency states that indoor air pollution may range anywhere from five times to 100 times the level of outdoor air pollution.

An HVAC system can be one of the best tools for improving your building's air quality by providing ventilation and filtration and controlling humidity.

ASHRAE recommends maintaining relative humidity levels below 60% to protect against the spread of mold and mildew, which can help control potential health and liability issues.

According to the World Health Organization, those who live in damp or moldy buildings have up to 75% more chance of suffering respiratory problems and asthma.

Source: "Poor indoor air quality increases risk of respiratory problems," Environmental Technology, www.envirotech-online.com.

LEADING HVAC SOLUTIONS TO IMPROVE AND MAINTAIN IDEAL AIR

Humidity control helps protect customer comfort and employee productivity

Lennox® products:	How air quality is improved:
<p>Humiditrol® dehumidification system for rooftop units</p> <ul style="list-style-type: none"> Available as a factory-installed option on the Emergence® rooftop unit 	<ul style="list-style-type: none"> Removes humidity without overcooling rooms Prevents growth of molds and bacteria Controls spread of allergens
<p>Humiditrol dehumidification system for split systems</p> <ul style="list-style-type: none"> Available as a field-installed accessory on S-Class™ and T-Class™ split systems Requires a variable-speed air handler or furnace and the ComfortSense® 7000 Series touchscreen thermostat 	



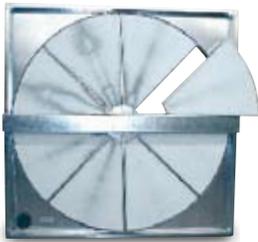
Emergence® Rooftop Unit with Prodigy® Unit Controller and CO₂ Sensor



S-Class™ Split System with the Humiditrol® Dehumidification System

Fresh-air ventilation helps protect the health of customers and employees

Lennox products:	How air quality is improved:
<p>Energy Recovery Wheel (ERW)</p> <ul style="list-style-type: none"> Factory-installed option in Emergence 35- to 50-ton rooftop units 	<ul style="list-style-type: none"> Dilutes indoor air pollutants Helps reduce concentrations of odors and VOCs Fresh air can be supplied indoors according to design or occupancy levels
<p>Energy Recovery System (ERS)</p> <ul style="list-style-type: none"> Combines an ERW with fans and attaches to rooftop unit 	
<p>Energy Recovery Ventilator (ERV)</p> <ul style="list-style-type: none"> Combines an ERW with fans as a stand-alone unit 	
<p>Economizers</p>	
<p>Demand Control Ventilation</p>	



Energy Recovery Wheel



Energy Recovery System



Energy Recovery Ventilator

QUALITY

Control irritants and maintain efficiency

Lennox products:	How air quality is improved:
<p>UVC Germicidal Light</p> <ul style="list-style-type: none"> • Designed to optimize the light safely across the entire coil surface • Available as field-installed kit (factory installation available for Emergence® units) 	<ul style="list-style-type: none"> • Reduces concentration of mold, bacteria and fungi on coils • Minimizes irritants and increases comfort • Maintains system efficiency by keeping the coils clean

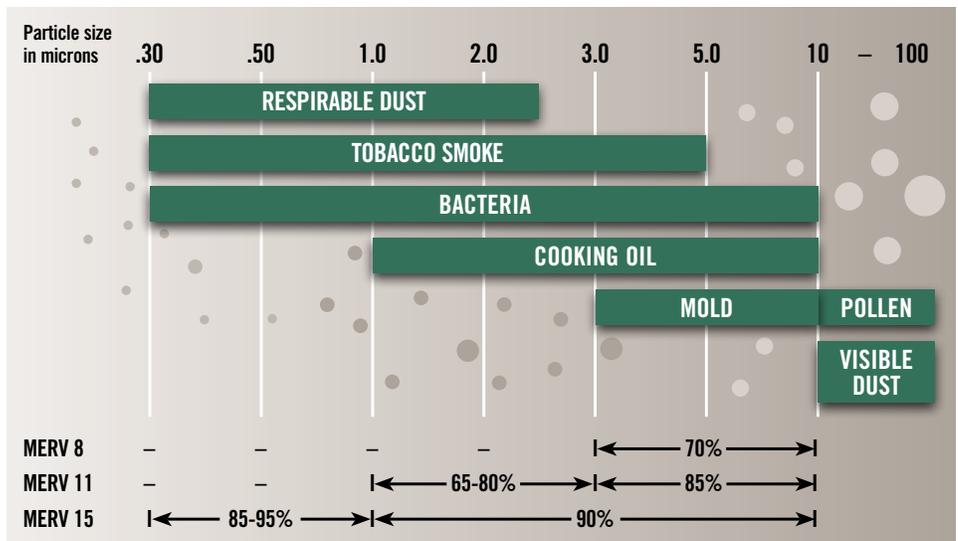
Note: Hg-lamps contain mercury. Dispose of properly. Refer to www.lamprecycle.org or call 1-800-9-LENNOX.



Filtration

Lennox products:	How air quality is improved:
<p>High-efficiency air filters</p> <ul style="list-style-type: none"> • MERV 8, 11, 13 and 15 	<ul style="list-style-type: none"> • Reduces concentrations of pollen, dust mites, dirt, mold spores, fungi, odors and chemicals • Enhances comfort • Helps protect furnishings • Helps prevent discoloration of walls and ceilings

AIR CLEANER REMOVAL AIR EFFICIENCIES



1 Micron = 1/25,000 of an inch

SOLUTIONS THAT FIT YOUR UNIQUE NEEDS

Every type of light-commercial building has different IAQ concerns. Lennox can provide unique solutions for applications ranging from retail stores to restaurants, warehouses to schools.

Improve indoor air quality by monitoring the building for pollutants such as:

- Mold, mildew and bacteria
- Volatile organic compounds (VOCs) from carpeting, tobacco smoke, furniture, fabric and building materials
- Airborne chemicals from fuel-burning appliances

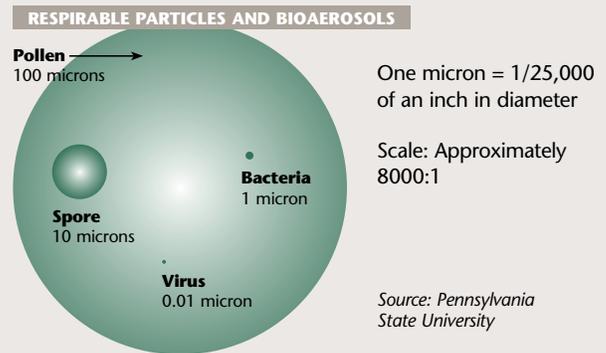
Lennox professionals can provide a thorough inspection of the building and suggest strategies for improving the air quality.

Research IAQ guidelines:

www.lungusa.org American Lung Association

www.epa.gov/iaq Environmental Protection Agency

www.nsc.org/ehc/airqual.htm National Safety Council Environmental Health Center



Small pollutants, major problems

Contaminants range in size from 0.01 to 100 microns. The smallest contaminants (under 2.5 microns) pose the greatest health threat, as they can get deep into the lungs and then into the bloodstream.

IAQ products can help remove:

- Small, breathable particles (.5 to 100 microns)
- Airborne mold spores, bacteria and viruses (0.01 to 50 microns)
- Odors/chemical vapors (0.01 to 1 micron)

IAQ: A PRIORITY IN TODAY'S SCHOOLS

According to the U.S. Environmental Protection Agency:

- More than 53 million children and about 6 million adults spend a significant portion of their days in public and private school buildings.
- Studies show that one-half of our nation's 120,000 schools have problems linked to indoor air quality.
- Students are at greater risk because of the hours spent in school facilities and because children are especially susceptible to pollutants.

The health and comfort of students and teachers are among the many factors that contribute to learning and

productivity in the classroom, which in turn affect performance and achievement. In addition to improving ventilation and filtration in classrooms, schools

should also consider selecting lower-emission maintenance supplies. A Lennox representative can help select the best solutions to reduce airborne contaminants and improve indoor air quality.



Source: U.S. Environmental Protection Agency, www.epa.gov/schools

SOLUTIONS FOR CUSTOMIZED COMFORT



Don't just choose a Lennox® product...choose a Lennox Commercial Comfort System. These complete packages of HVAC solutions provide tools to create a healthy and comfortable environment.

Packaged Units

- Strategos® Rooftop Units
- Emergence® Rooftop Units
- Landmark® Rooftop Units

Split Systems

- S-Class™ Air Conditioners/Heat Pumps
- T-Class™ Air Conditioners/Heat Pumps
- Air Handlers
- Indoor Coils

Heating

- T-Class Unit Heaters
- Unit Heaters
- Duct Furnaces
- Furnaces

Commercial Controls

- Prodigy® Control System
- L Connection® Network
- Systems Integration Solutions
- Commercial Thermostats

Indoor Air Quality

- Humiditrol® Dehumidification System
- Demand Control Ventilation
- Energy Recovery Ventilators/Systems
- Air Filters
- UVC Germicidal Lights



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Visit us at www.lennox.com, or contact us at 1-800-9-LENNOX

