AirAdvice[®] for Your Home



This report offers recommendations so you can make informed decisions about the health, comfort and safety your building provides. Knowing what's in the air you breathe and what you can do about it has never been more important. If you have additional questions, please visit **www.airadvice.com**

Conducted By: Princeton Air Conditioning, Inc. 609-799-3434

Test Period: 9/12/17 – 9/18/17

Monitor ID: #12027

Report ID: #271060

 What We Tested

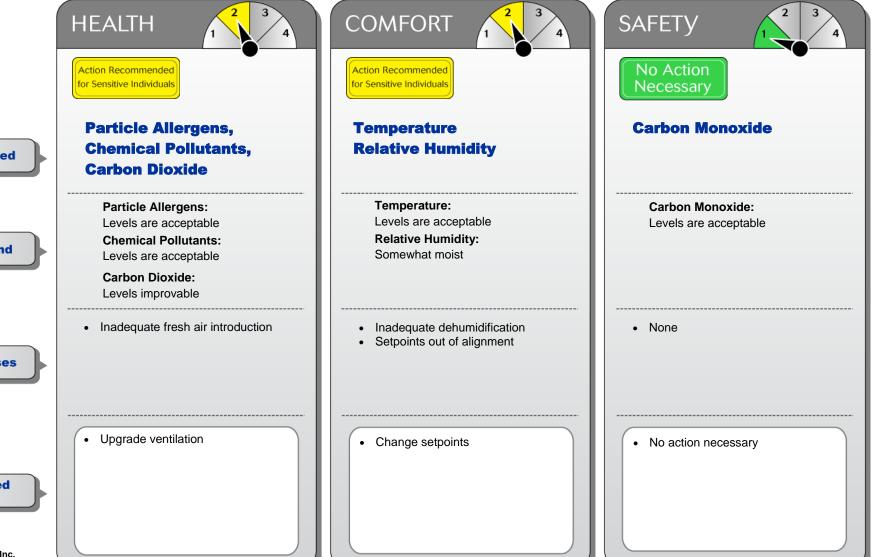
 What We Found

 Possible Causes

 Recommended

 Action

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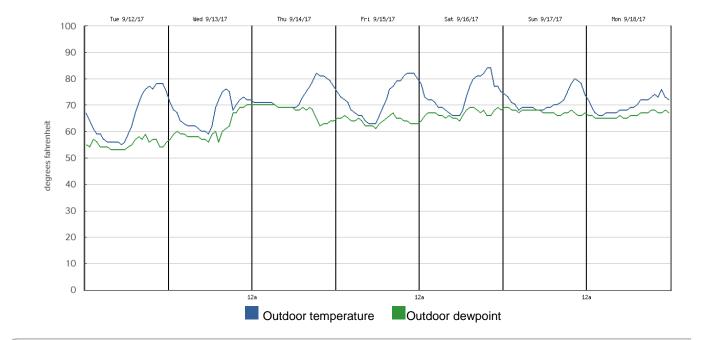
The Outdoor Environment

THE ENVIRONMENT

The Outdoor Environment plays a key role in what happens in the indoor environment. For instance, the outdoor air rating provided by the ALA is a C or worse grade, a good particulate filter on your home's fresh air source would help to improve the overall levels of particulates in the home. The outdoor weather illustrates how temperature and dew point can affect the indoor temperature and relative humidity. A dew point in the range of 40 to 60 oF is ideal to maintain the optimum comfort range for relative humidity (RH) inside. A dew point above 60 oF outside would require some amount of dehumidification to maintain the optimum comfort range.

Sources: <u>www.epa.gov</u> and <u>www.ashrae.com</u>





YOUR OUTDOOR AIR RATING*

Outdoor Air Quality Rating for: Mercer County*

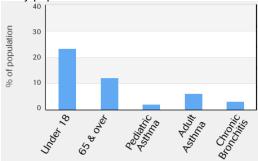


The American Lung Association rates each county for its outdoor air quality on a scale from 'A – F', with 'A' being the best. Outdoor air pollution varies based on city density, local industrial sources, climate, and time of year. When considering air quality, remember that outdoor air quality affects indoor quality.

* As determined by the American Lung Association®, ALA State of the Air Report 2008 (www.lungusa.org).

At Risk Groups

The following chart shows percentage of sensitive people at risk in your area (by risk group) based on total county population.





Outdoor Weather

Health: Particle Allergens

TEST RESULTS

What We Found: Particle allergen levels were below 10 ug/m3.

No Action Necessary

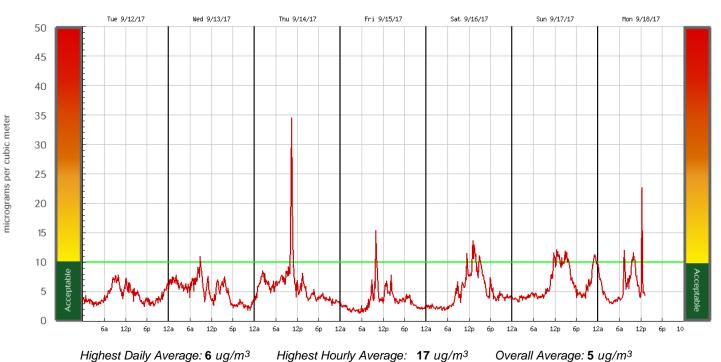
Why is no action necessary?

Particle allergens are generally not a cause for concern when daily average levels are below 10 ug/m3.

Particle allergens are known to trigger asthma and allergy symptoms. At levels above 35 ug/m³, they can harm normally healthy adults by causing emphysema and diminished lung capacity. Children, the elderly, and pregnant women are more susceptible.

Source: American Lung Association; Environmental Protection Agency (EPA); Indoor air Quality Association





ABOUT PARTICLE ALLERGENS

Particle allergens are always present in your home's air. They can build up to unhealthy levels due to activities in the home, the presence of excessive sources, and heating & cooling system issues.

Sources: Pets, dirt on shoes, burning candles, smoking, open windows (outside pollen, spores, etc.), dust mites, many common household activities, including cooking and cleaning.

Possible heating & cooling issues: Leaky, dirty, or poorly designed ductwork, inadequate filtration, no filtration at all.

RECOMMENDED ACTION

None -- no action necessary. For more information on indoor air quality, see:

www.airadvice.com



Health: Chemical Pollutants

TEST RESULTS

What We Found: Chemical pollutant levels were below 500 ug/m3.

No Action Necessary

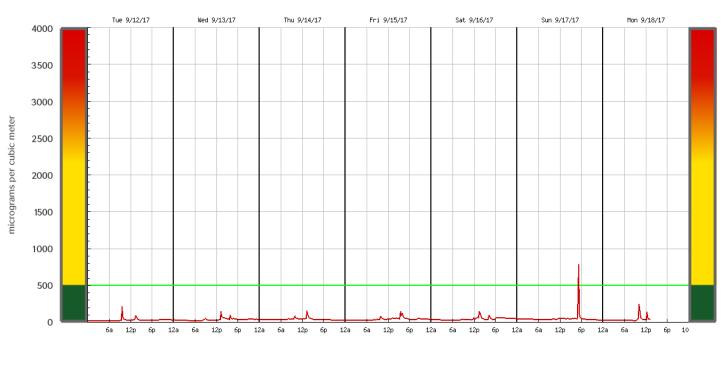
Why is no action necessary?

Chemical pollutants are generally not a cause for concern when daily levels are below 500 ug/m3.

Chemical pollutants are known to trigger asthma and allergy symptoms. At moderate levels, eyes and nasal passages can be irritated. Some people can experience nausea and headaches. At very high levels, they can even affect normally healthy adults by overworking the liver and kidneys. Children, the elderly, and pregnant women are more susceptible.

Source: European Union (EU); Leadership in Energy & Environmental Design (LEED); Environmental Protection Agency at Research Triangle Park (EPA-RTP).

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Highest Daily Average: 45 ug/m³

m³ Highest Hourly Average: **192** ug/m³

Overall Average: 36 ug/m³

ABOUT CHEMICAL POLLUTANTS

Levels can build up in your home's air due to usage of chemical products and heating/cooling system issues.

Sources: Off-gassing from building materials, carpeting, furniture and other synthetic materials, fuel fumes, scented products and air fresheners, personal care products, many household products such as paint, glue, and plastics.

Possible heating & cooling issues: Lack of fresh air introduced into home (either inadequate mechanical ventilation or none present), no chemical pollutant removal equipment.

RECOMMENDED ACTION

None -- no action necessary. For more information on indoor air quality, see:

www.airadvice.com



Health: Carbon Dioxide

TEST RESULTS

What We Found: Carbon Dioxide levels were between 751-999 ppm for a day or more.

Action Recommended for Sensitive Individuals

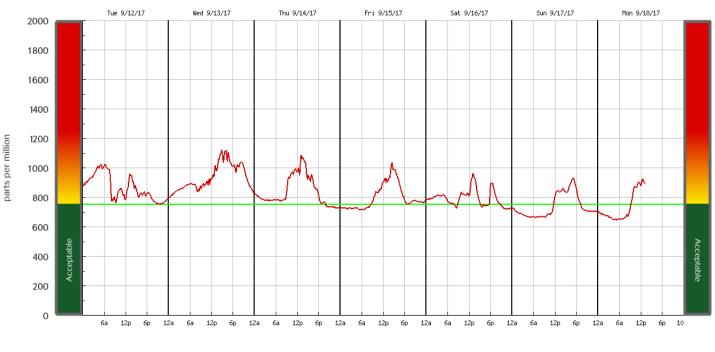
Why is action recommended?

Carbon dioxide levels are generally a cause for concern when daily average levels are above 750 ppm for sensitive individuals.

Carbon dioxide can quickly build up inside homes when people are present, causing air to feel 'stale.' If you have ever noticed persistent smells and/or wanted to crack a window in a room to get fresh air, you have experienced stale air.

Source: American Society of Heating, Refrigeration and Air Conditioning Engineers; Indoor Air Quality Association.





Highest Daily Average: 932 ppm

Highest Hourly Average: 1089 ppm

Overall Average: 827 ppm

ABOUT CARBON DIOXIDE

Elevated carbon dioxide levels can occur in the home due to source causes, home heating & cooling system issues, or both.

Sources: 'Tight' (well weatherized and energy-efficient) home construction without adequate ventilation, common human & household activity (breathing, and burning candles, gas, wood, or other combustion).

Possible heating & cooling issues: Lack of supplied fresh air (no ventilation), malfunctioning ventilation, ventilation shut off by occupant, HVAC equipment needs repair or service.

RECOMMENDED ACTION

There are many steps you can take to control the carbon dioxide levels of your home. You can:

Add Ventilation



Comfort: Temperature

No Action Necessary

TEST RESULTS

What We Found: The Temperature level was

acceptable

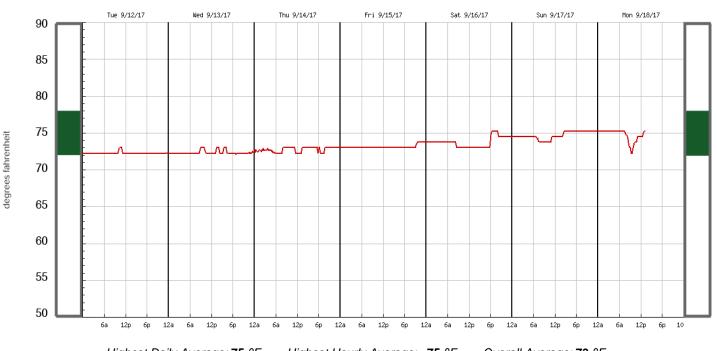
Why is no action necessary?

Comfortable temperatures fall within the range of 72F and 78F. In addition temperatures are most comfortable when steady, with fluctuations less than 1-1/2 degrees.

Ideally, temperature should be constant between all areas of the home. People experience a chilling or 'goose bump' sensation when temperatures are uneven and when air blows quickly across the surface of the skin.

Source: American Society of Heating, Refrigeration and Air Conditioning Engineers.





Highest Daily Average: **75** °F

°F Highest Hourly Average: **75** °F

F Overall Average: 73 °F

ABOUT TEMPERATURE

Fluctuating and/or low and high temperatures can occur due to structural causes and/or home heating & cooling system issues.

Structural causes: Poor insulation, inadequate weatherization (for example, poorly sealed windows and doors create drafts).

Possible heating & cooling issues: Thermostat poorly located (in an area where air supply falsely influences readings), uneven heating or cooling from room to room due to imbalanced ductwork or inadequate or poorly sized equipment.

RECOMMENDED ACTION

None -- no action necessary. For more information on indoor air quality, see:

• www.airadvice.com



Comfort: Relative Humidity

TEST RESULTS

What We Found: The relative humidity levels were above 55% for an hour or more.

Action Recommended for Sensitive Individuals

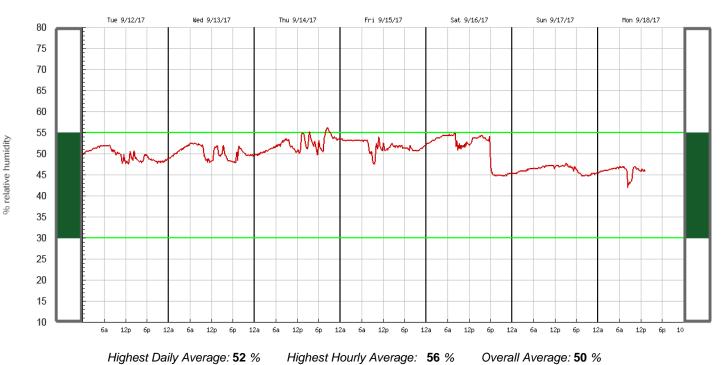
Why is action recommended?

Comfortable relative humidity levels fall within the range of 30% to 55%. Ideally according to the ALA the relative humidity should be 50%, with levels in the 40-50% range offering the most comfort possible.

The amount of moisture in the air influences both health and comfort. When air is too dry in the winter, people typically feel colder. Also, respiratory passages can become irritated and prone to infection.

Source: American Society of Heating, Refrigeration and Air Conditioning Engineers; Health Canada; Washington Department of Health.





ABOUT RELATIVE HUMIDITY

Structural causes: Standing water in basement or other areas, leaky pipes/faucets, inadequate ventilation in winter (causes moisture build-up inside), and home is under "negative pressure" (pulls dry or moist air in from outside).

Possible heating & cooling system issues: No or inadequate humidification, no or inadequate ventilation, improperly sized cooling system (prevents dehumidification), HVAC equipment needs repair (condensate drain or coil malfunctioning).

RECOMMENDED ACTION

There are many steps you can take to control the humidity of your home. You can:

- Install a dehumidification system
- Use bathroom fan during showers
- Use stove fan during cooking



Safety: Carbon Monoxide

oarts per million

TEST RESULTS

What We Found: Carbon Monoxide levels were below 5 ppm.

No Action Necessary

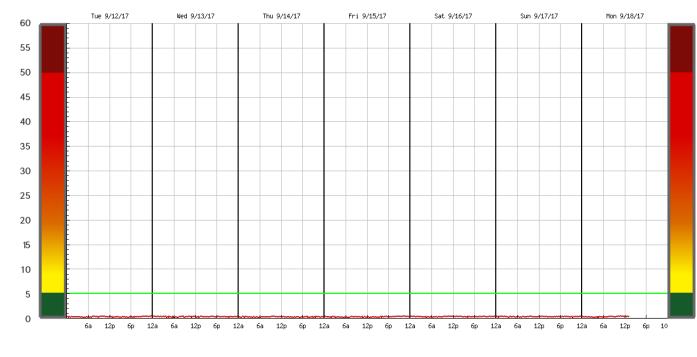
Why is no action necessary?

Carbon monoxide levels are a cause for concern when average levels are above 5 ppm (8-hour average). When levels (8-hour average) are above 20 ppm, immediate action should be considered.

Carbon monoxide is a colorless, odorless, poisonous gas produced by combustion. When people are exposed to relatively low levels (for an 8 hour period or more), it can cause headaches and nausea. At relatively high levels it can cause memory problems and ultimately death.

Source: US Environmental Protection Agency; World Health Organization (WHO); Indoor Air Quality Association (IAQA).

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Highest 8-hour Average: 0 ppm

pm Highest Hourly Average: **0** ppm

Overall Average: **0** ppm

ABOUT CARBON MONOXIDE

Elevated carbon monoxide levels in the home are a cause for concern. They can occur due to source causes, home heating & cooling system issues, or both.

Sources: Fireplaces, cooking, combustion appliances (water heater, gas dryer, stove), vehicles running in attached garage.

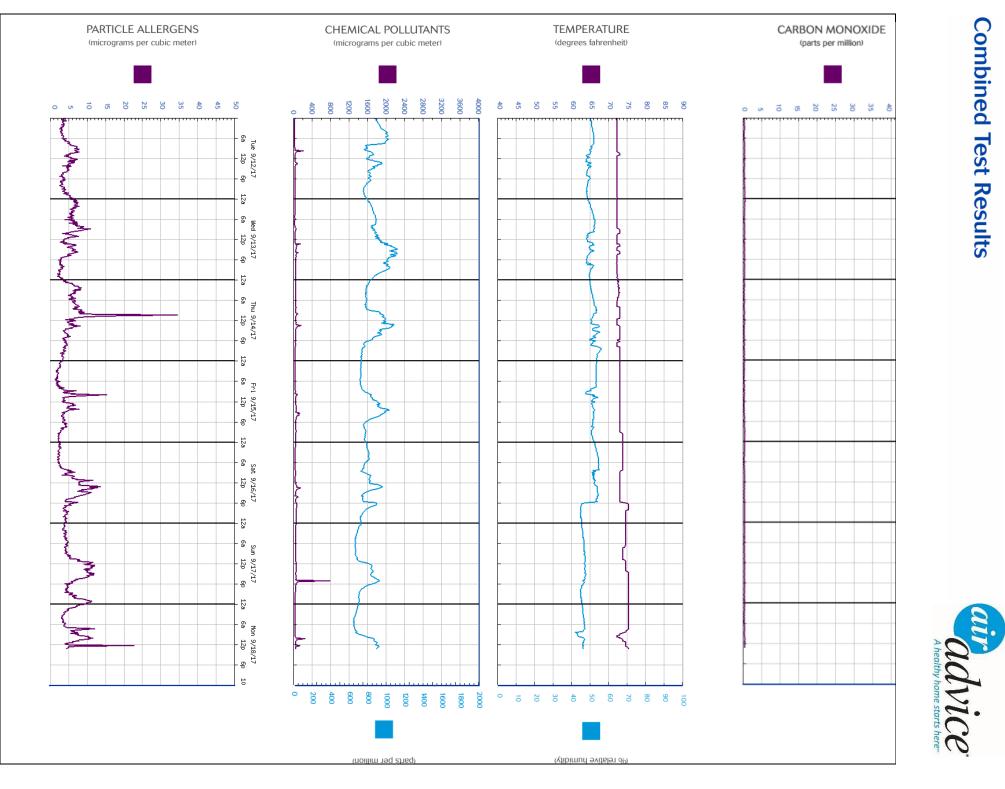
Possible heating & cooling system issues: Cracked heat exchanger on furnace, leaking chimney or vent, inadequate exhausting of a combustion appliance (water heater, gas dryer, stove).

RECOMMENDED ACTION

None -- no action necessary. For more information on indoor air quality, see:

www.airadvice.com





Assessment Parameters



Listed below are the parameters that were used to run your Indoor Air Quality report. These parameters were used to formulate specific recommendations based upon your unique air quality test results.

GENERAL INFORMATION

Room Monitor Placed In:	Basement store room
Sq. Ft. of Living Space:	Not specified
Year Building Built:	Not specified
No. Bedrooms:	Not specified
Attached Garage:	Not specified
Sensitive Population:	Not specified

SYSTEM INFORMATION

ENERGY COSTS

Therm of Gas:	Not specified
Gallon of #2 Fuel Oil:	Not specified
Kilowatt Hour:	Not specified
Gallon of Propane:	Not specified
Heating Hours per Year:	Not specified
Cooling Hours per Year:	Not specified

FILTRATION

Type of Air Filtration **1**" PCO/VOC Reduction: **Not specified** In-room HEPA Filter(s) **Not specified**

VENTILATION

ERV/HRV: Not specified Fan to Outside in All Bathrooms: Not specified Stove Exhaust Fan to Outdoors: Not specified

PURIFICATION

In-Room Purifier(s): Not specified

HUMIDIFICATION

Central Humidifier: Not specified Central Dehumidifier: Not specified In-room Humidifier(s): Not specified In-room Dehumidifier(s): Not specified

POSSIBLE POLLUTANTS

Anyone Smoke in Home/Garage: Not specified Candles/Incense: Not specified Wood Burning Appliance(s): Not specified Gas Appliance(s): Not specified Air Freshener(s): Not specified Recent Remodeling/New Furniture: Not specified Pets in Home: Not specified

Lennox: Improving Your Comfort

BEST

BETTER

GOOD

G61V Variable Speed Gas Furnace

The quietest furnace you can buy

- SilentComfort technology Ensures smooth, quiet heating
- Consistent comfort Runs at different speeds to
- minimize up-and-down temperature changes
- Enhanced humidity control Uses variable speed technology to remove excess moisture from the air
- High efficiency Can save you hundreds of dollars each vear

XC 21 Air Conditioner

The most quiet and efficient central air conditioner you can buy

SilentComfort technology - Delivers the ultimate in quiet, consistent cooling

Efficiency ratings of up to 20.5 SEER
 Nearly twice as efficient as a standard air conditioner

• Two-Stage Compressor - Runs at low speed 80% of the time, which means less expensive to operate and more consistent comfort

 Lennox® System Operations Monitor • First onboard cooling system diagnostics in the industry • Continuously monitors system performance

Humiditrol Whole-Home Dehumidifier System

Indoor air quality you can feel!

Total home comfort for optimal indoor air quality and moisture control

Helps reduce humid conditions in the home, reducing the opportunity for mold and mildew problems

• Designed to easily integrate with all Lennox® R410A cooling products to provide optimal comfort, indoor air quality and energy efficiency

SignatureStat Home Comfort Control

Precision humidity and temperature control

• Easy Integration - Works with advanced heating and cooling systems to cool, heat and control

• Excellent Energy Efficiency - Can significantly reduce your heating and cooling costs

G60V Variable Speed Gas Furnace

The quietest furnace in its class

- SilentComfort technology Ensures smooth, quiet heating
- Consistent comfort Runs at different speeds to minimize up-and-down temperature changes
- Enhanced humidity control Uses variable speed
- technology to remove excess moisture from the air

High efficiency - Can save you hundreds of dollars each year

XC 15 Air Conditioner

SilentComfort technology - Delivers the ultimate in quiet, consistent cooling

• Efficiency ratings of up to 16 SEER • Nearly twice as efficient as a standard air conditioner

 Energy Star® Qualified - Meets or exceeds EPA guidelines for energy efficiency, which means nergy savings

Reliable Performance

Humiditrol Whole-Home Dehumidifier System Indoor air quality you can feel!

Total home comfort for optimal indoor air quality and moisture control

• Helps reduce humid conditions in the home, reducing the opportunity for mold and mildew problems

 Designed to easily integrate with all Lennox® R410A cooling products to provide optimal comfort, indoor air quality and energy efficiency

SignatureStat Home Comfort Control

Precision humidity and temperature controlEasy Integration - Works with advanced heating and

cooling systems to cool, heat and control

• Excellent Energy Efficiency - Can significantly reduce your heating and cooling costs

G60V Variable Speed Gas Furnace

The quietest furnace in its class

- · SilentComfort technology Ensures smooth, quiet heating
- Consistent comfort Runs at different speeds to minimize up-and-down temperature changes

 Enhanced humidity control - Uses variable speed technology to remove excess moisture from the air

High efficiency - Can save you hundreds of dollars each year

XC 13 Air Conditioner

• Efficiency ratings of up to 14 SEER • Nearly twice as efficient as a standard air conditioner

Energy Star® Qualified - Meets or exceeds EPA

guidelinesfor energy efficiency, which means energy savings • Reliable Performance

Humiditrol Whole-Home Dehumidifier System

Indoor air quality you can feel!

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SignatureStat Home Comfort Control

Precision humidity and temperature control

• Easy Integration - Works with advanced heating and cooling systems to cool, heat and control

• Excellent Energy Efficiency - Can significantly reduce your heating and cooling costs



HOME COMFORT SYSTEMS Innovation never felt so good.™

Ask how a Lennox[®] variable speed blower and *SignatureStat*[™] Home Comfort Control can maximize the performance of your Indoor Air Quality solutions.

Lennox: Improving Your Indoor Air Quality

BEST

BETTER

GOOD

Energy Recovery Ventilator

- Effective ventilation for warmer climates
- Exchanges stale, contaminated filled indoor air with
- fresher outdoor air (per EPA statement)
- Most energy efficient method of ventilation available

UVC-2000 Germicidal Light

- Highest UV light intensity available
- Powerful ultraviolet energy for effective air purification
- Highest intensity on the market today with 2000
 microwatts

Energy Recovery Ventilator

Effective ventilation for warmer climates

- Exchanges stale, contaminated filled indoor air with fresher outdoor air (per EPA statement)
- Most energy efficient method of ventilation available

UVC-1000 Germicidal Light

Improves air quality and protects equipment by sterilizing surfaces

· 1050 microwatts

Lennox Ventilation Control System

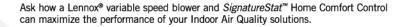
Improved ventilation for most climates

- · Positive ventilation for improved IAQ and comfort
- Automatic monitoring of outdoor and indoor humidity

UVC-500 Germicidal Light

Improves air quality and protects equipment by sterilizing surfaces

• 776 microwatts





HOME COMFORT SYSTEMS Innovation never felt so good.™