Four Reasons Homeowners Want Lower Humidity in Their Homes

Humidity can negatively affect your home, health, and comfort, which makes finding ways to reduce humidity in your home so important. With Unico's small duct, high velocity (SDHV) heating and air conditioning system, more humidity is removed from indoor air than with any other HVAC system.

The Unico System®

Unico removes
30% more humidity
than other air
conditioning systems

Top four reasons
to have a home
with low humidity.

01 Better comfort

02 Better indoor
air quality

03 Preserve woodwork and
architectural features

04 Maximize a home's
livable space

How Does The Unico System Remove Humidity?

According to a report funded by the U.S. Department of Energy[1][2], Unico's moisture control capability was evaluated and found that its variable-capacity heat pumps remove more humidity from homes than conventional, centrally ducted systems and ductless multi-split systems.

Conventional, fixed-capacity cooling equipment delivers cool air at around 60 to 65 degrees until the thermostat detects the room is the desired temperature, then enters a cycling mode that moves the air around the home but doesn't remove humidity. That's why many homeowners with conventional systems complain about being uncomfortable even when the thermostat shows that the home is at the set temperature. Unico delivers cool air at around 50 to 55 degrees, which improves efficiency. The system also has a variable-capacity heat pump, which makes it operate during low-load periods (times where the system requires less energy), such as late fall or cool summer nights.

The Unico System continues to optimize for both temperature and humidity to maintain the homeowner's level of comfort. When homes with conventional systems start to feel muggy, homeowners often run to the thermostat to turn down the temperature to get the AC system to run again. By optimizing for comfort instead of temperature, Unico System users save on their energy bills in the long term. They can set the thermostat 2 to 3 degrees higher and never need to manually change the temperature on days when it's really hot or humid.

[1] ORNL (Oakridge National Lab) compared humidity in a conditioned space when using SDHV and conventional ducted units - Munk, J., A. Gehl, and R. Jackson. 2012. "Performance of Variable Capacity Heat Pumps in a Mixed Humid Climate." Oak Ridge, TN. Oak Ridge National Laboratory. ORNL/TM-2012/17

[2] FSEC (Florida Solar Energy Center) compared SDHV, conventional ducted system and a minisplit system.- Martin, E.; Withers, C.; McIlvaine, J.; Chasar, D.; Beal, D. 2018. Evaluating Moisture Control of Variable Capacity Heat Pumps in Mechanically Ventilated, Low-Load Homes in Climate Zone 2A. Cocoa, FL; Florida Solar Energy Center (FSEC). DOE/EE-1702. https://www.osti.gov/ biblio/1421385-evaluating-moisture-control-variable-capacity-heat-pumps-mechanicallyventilated-low-load-homes-climate-zone

01 Better comfort

If you've ever wondered why it can sometimes feel stifling on a summer afternoon–even when the AC is running–humidity is the likely culprit.

Why does humidity make us uncomfortable? When it's hot, our bodies release heat through our skin. But if it's too humid, sweat doesn't evaporate, trapping heat on your body, leaving your clothes to start feeling damp as they absorb the sweat instead.

Conventional AC systems optimize home comfort against temperature. But the air conditioning mode of Unico's SDHV system removes more humidity from your home and optimizes for your ideal comfort not just the temperature set on the thermostat. The air handler operates with lower airflow and has thicker cooling coils than those found in conventional systems. It may seem like a small difference, but circulating air sits on the cooling coil longer in a Unico System.

A Florida Solar Energy Center (FSEC) study compared The Unico System's energy use to that of a conventional HVAC system. Unico's cooling coils were found to remove up to 30% more moisture than conventional air conditioning coils.

When outdoor temperatures are warm and muggy, like during the late fall or cool summer nights, conventional systems dump cool air into a room until it reaches the desired temperature. Then the cooling shuts off while the system only circulates air, and humidity in the home slowly increases. That leads to homeowners feeling hotter and uncomfortable in these conditions. They often complain that their system isn't working correctly and manage their discomfort by turning down the thermostat. Even with conventional systems that have high Seasonal energy efficiency ratio (SEER) ratings, that means the AC system runs more often, using more energy.

Annual Energy Usage of Air Conditioning with a Supplemental Dehumidifier and an SDHV Heat Pump Without Dehumidifier

A controlled study by the U.S. Department of Energy found that achieving the **same level of relative humidity** while not having to run a dehumidifier decreased total kilowatt hour usage by 19%. Unico uses less energy to achieve the same indoor comfort as conventional central air conditioning.

	Heating kWh	Cooling kWh	Dehumidifier	Total kWh
Conventional central air conditioning	549	2,978	1,875	5,402
Unico SDHV with relative humidity control	818	3,556	0	**4,374**

Did you know?

Relative humidity is a measure of the water vapor content of air expressed as a percentage of the maximum water vapor the air can hold. This measurement affects the how we "feel" temperature, which makes it an important indicator for the level of comfort in your home.

Fog is created when relative humidity is 100%.

Optimum comfort is between 45% & 55%.

Above 60% the air feels muggy.

31% Lower Relative Humidity

Results from a Florida Solar Energy Center study found that an SDHV system provides an average relative humidity of 41.2% versus 54.3% from conventional AC.

02 *Better indoor air quality*

As companies increasingly move away from full-time offices and more to a work-from-home schedule, more of us spend most of our working time in our homes. Homeowners have focused more on home comfort, including indoor air quality. According to the Environmental Protection Agency (EPA), a large step to improving the air quality of your home means preventing mold caused by moisture. Molds produce allergens, so if someone in your family has allergies or asthma, lowering relative humidity may help reduce allergy triggers.

The Mayo Clinic recommends achieving an indoor relative humidity between 30% and 50%, which is ideal for reducing the risk of certain health problems.

According to mayoclinic.org, “high humidity can make your home feel stuffy and can cause condensation on walls, [which] can trigger the growth of harmful bacteria.” Most states have an average annual relative humidity greater than 50%, so most households in the U.S. could benefit from improving indoor air quality by reducing humidity. According to the FSEC, Unico is the best system to do that in hot, humid climates. Other systems require extensive use of dehumidifiers to maintain proper humidity, significantly raising cost and energy use.

Ideal indoor humidity is between **30% - 50%** to reduce some health problems

The Mayo Clinic

https://www.epa.gov/indoor-air-quality-iaq/protect-indoor-air-quality-your-home

https://www.mayoclinic.org/diseases-conditions/common-cold/in-depth/humidifiers/art-20048021#:~:text=Dry%20sinuses%2C%20bloody%20noses%20and,cold%20or%20other%20respiratory%20condition.

03 Preserve woodwork and architectural features

Homeowners with historic or older homes know indoor humidity is often the enemy of preserving some of their most beloved features. After prolonged periods of high humidity, wood floors, doors and window frames swell and warp. At best, summer brings frustrations as floors get creakier, and windows and doors get stuck more often. At worst, it creates expensive repairs and reduces the value of these homes.

Unico's SDHV system is a popular choice among top historic home remodelers. The Unico System has been chosen by the crew on This Old House for more than 40 projects over the last 24 years. Its small, flexible ducts can be installed without tearing up walls. That means homeowners don't need to choose between comfort and preserving a home's unique character.

For added aesthetic value, you can even have outlet covers match the finish of any wall, ceiling, wood floor or architectural feature.

That's why the National Trust for Historic Preservation (NTHP) recommended Unico for President Lincoln's Cottage in Washington, D.C. Installing a standard central AC system would have required removing portions of the ceilings, walls and floors to make room for the bulky metal ductwork. Thanks to Unico's flexible tube ducts, the remodeling team added an AC system that removed the humidity threatening the presidential character of the home without tearing into one wall or pulling up a single floorboard. Today, visitors get to experience the museum as an accurate recreation of what it looked like when Lincoln drafted the Emancipation Proclamation there.

Rob O'Neal Photography

Humidity control from the Unico System helps preserve the books, artifacts and memorabilia displayed in the museum.

The National Trust for Historic Preservation recommends Unico for adding central air conditioning to historic homes.

https://savingplaces.org/stories/busted-three-myths-about-heating-and-cooling-historic-homes#.Ykue_SjMIuU

04 *Maximize a home's livable space*

Dehumidifiers or system add-ons take up space in living or storage areas. But Unico's dehumidifying properties from the thicker cooling coils are built right into the system. This helps homeowners maximize their livable space.

Wade Paquin, host of Building on an Island from The Build Show Network , says that Unico's dehumidifying properties help maximize living space for his clients. The owners of the multimillion-dollar, custom-built home on the show wanted to utilize a previously damp basement. Humidity "was a major concern for my client," said Paquin. "The previous home that stood here had major issues with moisture and mold. They asked me to ensure that this ground-level, walk-out half-basement was not going to have those same issues." Installing a Unico System helped the homeowners manage humidity levels by mitigating excessive moisture.

Did you know?

Installing an air handling unit for each level can optimize its cooling and humidity-reducing performance without taking up livable space. Unico's air handling unit is compact enough to fit into attics, crawl spaces or any out-of-the-way space to reduce its footprint in the home.

Which system is best for your home?

Not all HVAC systems are created equal. The chart below shows key features The Unico System has that other ductless mini split air conditioning systems and conventional air conditioning systems don't have.

	Unico Small Duct, High Velocity (SDHV) System	Ductless Mini Split Air Conditioning	Conventional Central Air Conditioning
Variable-capacity heat pump conditions air during low-load times	✓	✓	✓
Distributes conditioned air to every room	✓	✗	✓
Evenly mixes air throughout the room	✓	✗	✗
Can be installed without major renovation	✓	✓	✗
Achieves low relative humidity without running a dehumidifier	✓	✗	✗
Recommended by the National Trust for Historic Preservation	✓	✗	✗

Meeting the requirements for new regulations

No matter why homeowners need to control humidity in their home, Unico has the answer. Because of its ability to significantly reduce relative humidity levels, occupants feel more comfortable at higher thermostat settings, allowing for reduced operation and resulting in considerable energy savings.

The FSEC predicts that conventional ducted air conditioning will continue to fall behind as building engineering technologies continue to improve. Homes are becoming tighter with less energy loss, reducing the amount of energy needed to cool a home. This is increasing the periods of low-load cooling, where a variable-capacity heat pump will be the only system with the ability to reduce relative humidity sufficiently.

Heating and cooling technologies must also adapt to the new regulations implemented to mitigate climate change. This is usually described as equipment efficiency, but without regard to comfort. As the studies referenced in this report show, humidity control greatly affects realized efficiency. A system of lower equipment efficiency that maintains proper humidity can outperform a high equipment efficiency system that does not maintain proper humidity. Technology from conventional HVAC systems has not changed for decades, which means they are not positioned to be a long-term solution for meeting these new regulations in heating and cooling. Unico is already ahead of these changes by employing a heat pump, reducing or eliminating homeowners' reliance on natural gas or oil-burning furnaces that use fossil fuels.

Whether you're building a new, modern home or looking to preserve a traditional home, Unico is the best choice for homeowners who want to control humidity, improve interior comfort and save energy.

Visit unicosystem.com to upgrade your home with The Unico System.

Unico, Inc. is the leader in small duct heating and cooling systems and other high-end HVAC systems. The company manufactures all of its products in St. Louis, Missouri, with over 125,000 square feet of modern manufacturing space. The company is well known for extensive use in older, architecturally unique homes and buildings as well as elite, high-end custom homes. The company is family owned and operated and their products are available throughout the United States and Canada, and in over 28 countries around the world.

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