GUIDE TO HIGH-PERFORMING HOMES WITH Exceptional INDOOR AIR QUALITY

RenewAire®
Energy Recovery Ventilation
WHAT CAUSES DEFICIENT IAQ?
As new buildings get tighter to seal weather out, they seal in contaminants, causing deficient indoor air quality (IAQ), which impacts health and cognitive function. RenewAire’s Energy Recovery Ventilators (ERVs) are the sustainable solution. RenewAire ERVs improve IAQ by diluting contaminants such as off-gassing from carpeting, furniture and building materials, excess humidity and mold, odors, pollutants and contaminants from cooking and cleaning, carbon dioxide, hair and fibers.

ADVERSE EFFECTS OF DEFICIENT IAQ
Deficient IAQ has numerous adverse effects on health, cognitive function, productivity and general wellbeing.

HEALTH PROBLEMS
Acute allergies, headaches, coughs, asthma, skin irritations and breathing difficulties, as well as chronic illnesses such as cancer, liver disease, kidney damage and nervous-system failure.

COGNITIVE IMPAIRMENT
Studies by the Harvard School of Public Health and the Lawrence Berkeley National Laboratory found that carbon dioxide negatively impacted thinking and decision-making at levels commonly found inside homes and buildings.

REduced PRODUCTIVITY
Enhanced IAQ could save up to $200 billion in worker performance and $58 billion in lost sick time.

WHO’S AT RISK?
All people are at risk of suffering from deficient IAQ due to considerable time spent indoors. However, children and seniors are most vulnerable due to weaker immune systems. Children are especially susceptible because proportionally they inhale more pollutants than adults and have narrower airways (World Health Organization).

RENEWAIRE VENTILATION SOLUTIONS IMPROVE HEALTH AND WELLNESS

Indoor air is two to five times and may be 100 times more polluted than outdoor air

HIDDEN AIR CONTAMINANTS IN YOUR HOME
1. Humidity: Exhaled breath, water sources
2. Carbon dioxide: Exhaled breath
3. Formaldehyde, VOCs, Toxic Gases: Furniture and treatments, mattresses, carpets, adhesives, cleaners, paints
4. Odors: Bathrooms, kitchens, occupants, pets
5. Phthalates: Adhesives, vinyl, plastic pipes, building materials
6. Bioeffluents: Human metabolic process
7. Radon: Uranium decaying in soil
8. Mold: Stagnant water, drains, condensate pans, damp areas
9. Dust Mites: Carpets, fabrics, foam cushions

PEOPLE SPEND 90% OF THEIR TIME Indoors

Exhaust-only fans remove indoor air from bathrooms and kitchens, causing depressurization that then ventilates in uncontrolled outdoor air through cracks in the home. But disadvantages exist: with no filtration, outdoor contaminants are drawn indoors; with more airtight homes, it is difficult to improve IAQ this way; fans can lack energy efficiency, leading to higher costs.

Balanced ventilation combines exhaust-only with make-up fans interlocked with an air handler. The system delivers controlled outdoor air into the home, but disadvantages exist: there is no energy recovery, it is decentralized making it more complex to install and hard to maintain, there is no return on investment.

RenewAire’s balanced ERV ventilation with integrated supply and simultaneous exhaust improves IAQ and adds many benefits:
- otherwise-wasted, exhaust-air total energy is reused to condition outdoor air coming in, which optimizes energy efficiency
- filtration further enhances IAQ
- the centralized system is reliable and easy to install and maintain
- payback is quick and ROI is substantial
- operating costs are cut and long-term annual savings are realized
- a leading warranty means peace of mind

RenewAire’s balanced ERV ventilation with 30% more airflow goes above code minimums to provide exceptional IAQ, the increased airflow offers further dilution of indoor contaminants resulting in an even lower concentration of gases and particulates.

ASHRAE STANDARD 62.2 ENSURES HEALTHY IAQ IN HOMES

In 2016, the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) revised Standard 62.2. The revision continued to evaluate every building’s minimum ventilation needs, but also placed a greater emphasis on IAQ and its role on health.

To calculate the minimum ventilation required for your home: .03 x sq. ft. + 7.5 (bedroom + 1). For example, a 2,200 sq. ft. home with 4 bedrooms requires a minimum of 104 CFM (accounts for infiltration).

SINGLE/MULTI-FAMILY ERVs

Increased airtightness of homes and human activity indoors cause deficient IAQ, resulting in health problems and cognitive impairment for occupants, especially children and the elderly. Affordable and sustainable RenewAire ERVs can be installed easily in homes of every type (new construction or renovation projects) to enhance IAQ and save energy, thus improving occupants’ wellbeing. They improve IAQ by removing contaminants like off-gassing from carpeting, furniture and building materials, excess humidity and mold, and even dangerous bacteria and viruses.

IMPROVE INDOOR AIR QUALITY IN YOUR HOME

VENTILATION IS THE SOLUTION

The solution to pollution is dilution achieved via balanced ventilation, which is the most effective way to achieve cleaner and healthier indoor air. With enough controlled fresh and filtered outdoor air coming in to replace equal parts balanced design of stale indoor air, IAQ will be enhanced.

This can be done energy-efficiently, cost-effectively and sustainably with RenewAire’s energy recovery ventilation solutions, which reuse otherwise wasted total energy from the exhaust airstream to condition incoming outdoor air. The results are improved IAQ, greater ventilation efficiency and major energy cost savings.

VENTILATION STRATEGIES FOR YOUR HOME

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>STRATEGY</th>
<th>AIRFLOW CFM</th>
<th>RESULTS</th>
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<tbody>
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DID YOU KNOW

During sleep, people breathe more deeply, allowing more contaminants to enter their body. The results may include aggravated asthma and allergies, stuffy noses, headaches, scratchy throats, coughs, sleep interruptions and general sickness. Additionally, contaminants are off-gassed from foams, plastics and flame-retardants found in most new beds and mattresses.
RENEWAIRE ERVs FOR EVERY HOME

Optimizing Energy Efficiency in Every Geographic Region or Climate

RenewAire residential ERVs are a sustainable ventilation solution. Our static-plate, cross-flow core separates the outgoing, polluted indoor airstream from the incoming fresh airstream—while simultaneously transferring total energy (heat and water vapor) between the two. Airstreams do not mix and pollutants are not transferred across partition plates. In the winter, that means that the cold, dry outside air is preheated and humidified by the outgoing warm interior air. And in the summer, the warm, humid outside air is precooled and dehumidified by the outgoing air-conditioned interior air.

Installation Strategies for New or Retrofit Construction

Central Exhaust
The preferred installation application for any new construction, as it is the most energy-efficient ventilation strategy.

Central Exhaust provides an ample supply of filtered outdoor air and replaces bathroom exhaust fans, capturing energy from bathrooms and kitchens that would otherwise be wasted. Air is collected from a small ductwork system at each exhaust location, and the unit delivers fresh air to the furnace/AC return air duct. According to the Department of Energy (DOE), balanced ERV ventilation results in the lowest level of total volatile organic compounds (TVOCs).5

General Exhaust
Installation option for retrofitting an ERV into your established system.

General Exhaust provides an ample supply of filtered outdoor air and is often a preferred option for use in a home that already has an HVAC system in place. This installation method utilizes exhaust fans and ductwork that already exist. Fresh air may be supplied to the furnace/AC via return air duct connections. This is commonly referred to as partial bypass.


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INSTALL A RENEWAIRE ERV
FOR EXCEPTIONAL IAQ IN YOUR HOME

To find a RenewAire representative in North America,
visit renewaire.com/how-to-buy/find-a-rep

For information on ERV rebates in your community,
visit energy.gov/savings/search

RENEWAIRE ERVs ARE THE SUSTAINABLE VENTILATION SOLUTION