RenewAire
Energy Recovery Ventilation

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RENEWAIRE TECHNOLOGIES: AT THE CORE OF THE THREE PILLARS OF SUSTAINABILITY

By enhancing IAQ and the human condition, reducing energy use and cutting costs, RenewAire provides key support to "People, Planet and Profit"

MADISON, WI – December 14, 2018 – RenewAire's energy recovery ventilation technologies, in the form of Energy Recovery Ventilators (ERVs) and Dedicated Outdoor Air Systems (DOAS), are the best choice for providing cleaner and healthier indoor air while saving energy. As a result, RenewAire's static-plate, cross-flow core is at the center of the Three Pillars of Sustainability: People, Planet and Profit.

Here's how this is possible:

HOW RENEWAIRE TECHNOLOGIES SUPPORT PEOPLE

As buildings become more airtight, an unintended consequence is an accumulation of internally generated contaminants that cause deficient indoor air quality (IAQ). Deficient IAQ is a serious problem since it negatively impacts indoor occupants' health, cognitive function, productivity and wellbeing.

RenewAire technologies enhance IAQ via increased and balanced ventilation that replaces equal parts of stale indoor air with fresh and filtered outdoor air. This process reduces the amount of indoor air contaminants and creates cleaner and healthier indoor air.

The benefits of enhanced IAQ via RenewAire technologies are numerous for indoor occupants, including:

- **Better health:** By enhancing IAQ, RenewAire ERVs play a key role in reducing the number of short- and long-term health problems caused by breathing in polluted indoor air.
- **Stronger cognitive function:** A Harvard study found that cognitive scores were 101% higher in a green-building environment with double the ventilation compared to an indoor environment with deficient IAQ (high VOC concentration).[1]
- **Greater productivity:** Workers can be 6% more productive when the EPA rates air pollution levels as good, thus creating higher-quality indoor air.[2] Further, greater ventilation can reduce absenteeism by 10 absences per 1,000 students.[3]
- **Optimal wellbeing and human condition:** Due to better health, cognitive function and productivity, RenewAire ERVs improve indoor occupants' overall wellbeing and the human condition.

HOW RENEWAIRE TECHNOLOGIES SUPPORT THE PLANET

Residential and commercial buildings consume massive amounts of energy during their operations, which necessitates the burning of fossil fuels and causes carbon emissions to be released into the atmosphere. To counter this environmentally harmful scenario, RenewAire developed technologies to ventilate indoor spaces energy-efficiently and sustainably.

Specifically, here's how RenewAire technologies support the planet:

- **Reduce energy consumption:** By using otherwise-wasted total energy (heat and humidity) from the exhaust airstream to precondition fresh and filtered outdoor air coming inside, RenewAire ERVs and DOAS optimize energy efficiency. This process decreases energy consumption, downsizes equipment and reduces HVAC ventilation loads by up to 70%.[4]
- **Protect the environment:** Because RenewAire ERVs optimize energy efficiency and reduce HVAC loads, they decrease the overall energy consumption of homes and buildings, thus supporting sustainability efforts and helping to protect the environment.
- **Realize green buildings:** Green buildings require high levels of IAQ and energy efficiency. Therefore, RenewAire ERVs are a key component of green buildings since ERVs create cleaner and healthier indoor air while optimizing energy efficiency.
- **Achieve green certifications:** Because RenewAire ERVs enhance IAQ and save energy, they play a key role in helping to attain top-level, green-building certifications, including LEED, Green Globes, ENERGY STAR, Net Zero, Passive House, PHIUS, Living Building Challenge, HVI, AHRI and WELL Building Standard.
- **Walk the Walk:** As a company committed to sustainability, RenewAire believes it's critical to be a responsible corporate citizen and to practice what we preach. Due to this, our brand-new Madison, WI facility is completely wind-powered, has three Green Globes and is on track to receive LEED Gold and ENERGY STAR certifications.

HOW RENEWAIRE TECHNOLOGIES SUPPORT PROFIT

When the amount of energy it takes to run a home or building is reduced, this is not only good for the environment, but also for the bottom line of home and building owners alike. Less money is required for building operations, and with minimized energy needs, HVAC equipment can be downsized, which saves on capital costs.

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Here are the key ways RenewAire technologies support profit:

- **Cut costs:** By reusing otherwise-wasted, exhaust-airstream total energy to condition incoming outdoor air, RenewAire ERVs can cut ventilation energy costs by up to 65%.[5] In addition, by downsizing HVAC equipment, capital and operating costs can be substantially lowered. This means that RenewAire ERVs represent the lowest total cost of ownership.
- **Increase profits:** RenewAire ERVs are a key component of green buildings since ERVs create healthy indoor air while reducing energy consumption. Green buildings can grow lease potential by 20%, ROI by 19% and building asset value by 10%.[6] Demand for green buildings doubles every three years, so these profit figures are growing as well.[7]
- **Tremendous value:** Using the RenewAire HE2XINH as an example, the Net Present Value (NPV) is $18,500+ for 10 years and $32,000+ for 20 years at an initial investment of $2,650.[8] Further, RenewAire ERVs can increase the Internal Rate of Return (IRR) by 50%.[9]
- **Short payback and the best warranty:** Due to tremendous energy savings and reliability, RenewAire technologies have a short payback period of less than two years. RenewAire ERVs and DOAS also have an industry-best 10-year warranty with the fewest claims of any other manufacturer.
- **Boost worker productivity:** A study by Harvard found that doubling the rate of ventilation from 20 CFM/person to 40 CFM/person only costs about $32/person/year and leads to an incredible productivity increase of $6,500/person/year.[10] If ERVs are added, the anticipated increase in energy costs can be reduced by 60%.[11] What's more, a study by the Lawrence Berkeley National Laboratory found that enhanced IAQ improves worker performance by $200 billion and saves $58 billion in avoided sick time.[12]
- Lower maintenance costs: Because RenewAire ERVs require minimal upkeep and hardly break down, maintenance costs are significantly reduced.

For more information on how RenewAire technologies support the Three Pillars of Sustainability, visit: www.renewaire.com.

ABOUT RENEWAIRE

For 35 years, RenewAire has been a pioneer in improving people's health, cognitive function, productivity and wellbeing by enhancing IAQ via energy recovery ventilation technologies. This is done energy-efficiently, cost-effectively and sustainably with fifth-generation, static-plate, enthalpy-core Energy Recovery Ventilators (ERVs) and Dedicated Outdoor Air Systems (DOAS). For more information, visit: www.renewaire.com.

[1] Joseph G. Allen, Piers MacNaughton, Usha Satish, Suresh Santanam, Jose Vallarino and John D. Spengler, "Associations of Cognitive Function Scores with Carbon Dioxide, Ventilation, and Volatile Organic Compound Exposures in Office Workers: A Controlled Exposure Study of Green and Conventional Office Environments," National Institute of Environmental Health Sciences, Published in Environmental Health Perspectives, October 26, 2015, https://ehp.niehs.nih.gov/doi/10.1289/ehp.1510037.

[2] Tom Y. Chang, Joshua Graff Zivin, Tal Gross, Matthew Neidell, "Air Pollution Is Making Office Workers Less Productive," Harvard Business Review, September 29, 2016, https://hbr.org/2016/09/air-pollution-is-making-office-workers-less-productive.

[3] "Frequently Asked Questions about Improved Academic Performance," U.S. Environmental Protection Agency (EPA), https://www.epa.gov/iaq-schools/frequently-asked-questions-about-improved-academic-performance#IAQIAP_Maintenance.

[4] All data pertains to a RenewAire HE2XINH ERV when compared to conventional exhaust equipment at 1,500 CFM of OA in Minnesota using DX cooling and gas heat. Future energy costs calculated based on current energy costs.

[5] All data pertains to a RenewAire HE2XINH ERV when compared to conventional exhaust equipment at 1,500 CFM of OA in Minnesota using DX cooling and gas heat. Future energy costs calculated based on current energy costs.

[6] "The Business Case for Green Building," U.S. Green Building Council (USGBC), February 10, 2015, https://www.usgbc.org/articles/business-case-green-building.

[7] "Green Building Demand Doubles Every Three Years," CleanTechnica, November 25, 2015, https://cleantechnica.com/2015/11/25/green-building-demand-doubles-every-three-years/.

[8] $2,650 is derived by taking the up-front cost of $10,000.00 and subtracting from it the costs of the conventional ventilation system ($1,500.00) and the conventional A/C system ($5,850.00) that the end user avoided having to pay by using an ERV (for Minnesota).

[9] All data pertains to a RenewAire HE2XINH ERV when compared to conventional equipment at 1,500 CFM in Minnesota using gas heat.

[10] Piers MacNaughton, James Pegues, Usha Satish, Suresh Santanam, John Spengler and Joseph Allen, "Economic, Environmental and Health Implications of Enhanced Ventilation in Office Buildings," International Journal of Environmental Research and Public Health, November 18, 2005, http://www.mdpi.com/1660-4601/12/11/14709/html.

[11] Piers MacNaughton, James Pegues, Usha Satish, Suresh Santanam, John Spengler and Joseph Allen, "Economic, Environmental and Health Implications of Enhanced Ventilation in Office Buildings," International Journal of Environmental Research and Public Health, November 18, 2005, http://www.mdpi.com/1660-4601/12/11/14709/html.

[12] Leon Alevantis, (Department of Health Services), Adam Berman (Capital E), Evan Mills (Lawrence Berkeley National Laboratory), Jeff Perlman (Capital E), "The Costs and Financial Benefits of Green Buildings," U.S. Green Building Council (USGBC), October 2003, https://noharm-uscanada.org/sites/default/files/documents-files/34/Building_Green_Costs_Benefits.pdf

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