

Benefits of Energy Recovery Ventilation For Planned Replacement Of HVAC Systems

Waiting is Inefficient

For most building owners and occupants, worrying about the replacement of their HVAC system is likely to be low on their priority list. It seems safe to assume that most people will tend to wait until their HVAC system fails before considering replacing the system.

Waiting for failure is a reactive process, since building owners call their local HVAC contractor after the system fails. The contractor then has to 'scramble' to replace the system as quickly as possible.

The contractor is negatively impacted by this process since he has to disrupt his planned work in order to perform the replacement. Consequently, there are delays to other projects or he has to pay overtime to have the work performed during off-hours.

The building owner is negatively impacted by unexpected HVAC downtime, which inevitably occurs when the HVAC system is most needed.

Planned replacement proactively replaces HVAC equipment as it approaches its end of life instead of waiting for failure. Planned replacement reduces disruption, avoids unnecessary cost, avoids downtime, and streamlines the replacement process.

Better Planning = Better Systems

Another benefit for planned replacement is the ability to take advantage of technologies that may not be readily available on an emergency basis. These technologies can reduce operating costs and often qualify for utility rebate programs. One such technology is energy recovery ventilation (ERV).

HVAC units with energy recovery ventilation are available from all leading manufacturers. However, they are not stocked in the distribution channel for quick replacement. A system with energy recovery may have a lead-time of a few weeks. This lead-time is unacceptable in a reactive replacement process, but planned replacement makes the lead-time irrelevant.

The benefits to a building owner of a system with energy recovery ventilation are significant. An HVAC system that utilizes energy recovery is more energy efficient, improves humidity control, reduces peak demand charges, and many utilities, such as FPL, provide rebate programs to offset first cost.

The examples on the next page illustrate typical economics for planned versus unplanned replacement in Milwaukee and Miami. Note the Airxchange ERV wheel handles 70% of the outdoor air load, enabling a 25% downsizing of the rest of the DX cooling system that offsets the installed cost of the ERV.



Example #1: 20 Ton HVAC System with 25% Outside Air—Miami

Rooftop System with ERV

Cost of DX System (15 tons)	\$15,000
Cost of ERV (5 tons)	\$6,000
Rebate on ERV	(\$2,000)
Total Upfront Cost	\$19,000
<i>Yearly Operating Savings—12x5</i>	<i>\$1,330</i>
<i>Lifetime Savings (15 Years)</i>	<i>\$19,950</i>

Rooftop System without ERV

Cost of 20 Ton DX System	\$20,000
Cost of ERV	\$0
Rebate on ERV	\$0
Total Upfront Cost	\$20,000
<i>Yearly Operating Savings—12x5</i>	<i>\$0</i>
<i>Lifetime Savings (15 Years)</i>	<i>\$0</i>

Example #2: 20 Ton HVAC System with 25% Outside Air—Milwaukee

Building HVAC System with ERV

Cost of 15 Ton DX System	\$15,000
Cost of ERV (5 tons)	\$6,000
Rebate on ERV	(\$2,500)
Total Upfront Cost	\$18,500
<i>Yearly Operating Savings—12x5</i>	<i>\$1,883</i>
<i>Lifetime Savings (15 Years)</i>	<i>\$28,245</i>

Building HVAC System without ERV

Cost of 20 Ton of DX System	\$20,000
Cost of ERV	\$0
Rebate on ERV	\$0
Total Upfront Cost	\$20,000
<i>Yearly Operating Savings—12x5</i>	<i>\$0</i>
<i>Lifetime Savings (15 Years)</i>	<i>\$0</i>

Examples above assume \$1000 per ton, \$3 per cfm for energy recovery, \$1 per therm, \$.08 kWh, 2000 cfm outdoor air

Being Proactive Pays

In the first example, a building owner in Miami can realize a savings of \$1,330 per year with a lower first cost of \$1000 and 15 year savings of \$19,950.

In the second example, a building owner in Milwaukee can realize a savings of \$1,883 per year with a lower first cost of \$1500 and 15 year savings of \$28,245

Everybody Wins

The contractor also wins with planned replacement, since he now is providing a premium service at lower cost resulting in happier customers and higher profit margins. The building owner wins, since he saves money, and the utility wins since peak demand is lowered.

When properly implemented, a planned replacement strategy has significant advantages for the contractor, the building owner, and the utility.

