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Reduced Costs With Site-Recovered Energy

Energy recovery wheels cut outdoor air energy costs and minimize equipment design loads

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Airxchange's Brushless DC Motors with integrated speed control are now available with energy recovery wheels. A more reliable and cost effective solution than conventional VFD options, they require no external drives and operate on a linear signal to regulate speed for control of temperature and Brushless DC Motors are equipped with integrated speed control and energy-recovery wheels. The product requires no external drives and operates on a linear signal to regulate speed for control of temperature and humidity.

Retailers and other building owners are caught between two powerful and conflicting forces: the need to lower energy and equipment costs, and the need to meet or exceed outdoor air ventilation regulations for the health and comfort of customers and employees alike. Indeed, studies have proven that outdoor air ventilation creates a healthier work environment. However, as outdoor air rates increase, so does the size, cost and operating expense of HVAC systems.

To address the challenge, many owners are deploying site-recovered energy technologies, such as energy recovery ventilation (ERV). Designed to operate with new or existing HVAC units, ERV technology provides an affordable means to simultaneously cut HVAC energy costs without compromising outdoor air ventilation requirements.

"Energy recovery wheels, also known as enthalpy wheels, resolve the conflict between indoor air quality and energy conservation by recovering site energy contained in building exhaust air," said Stephen J. Pargeter, VP product engineering, Airxchange, Rockland, Mass., which manufactures energy recovery ventilation wheels. "Up to 80% of this energy is recycled to precondition outdoor air, resulting in reduced HVAC load and operating cost."

For new and replacement projects, energy recovery costs are typically offset by lower HVAC system first costs, while up to 80% reductions in outdoor air fuel consumption provide healthy returns for the life of the HVAC system, according to Pargeter.

Energy recovery wheels may also be used to improve the efficiency of relatively new HVAC systems by up to 40% with one- to three-year paybacks when supported by the local utility. They also can help retailers with their environmental initiatives.

“Energy recovery wheels enable building owners interested in marketing green, healthy buildings to increase outdoor air levels above minimum code, earning LEED points and reducing the risk of indoor air quality complaints,” Pargeter explained.

Energy recovery wheels work by transferring energy by rotating between outdoor air and exhaust airstreams to transfer heat and moisture from one airstream to the other.

The total energy saved depends on the wheel’s effectiveness and the difference in temperature and humidity between the two air streams. A bigger differential drives larger energy savings.