AIRXCHANGE

Georgia Tech University

CASE STUDY

Service Contractor Finds Success With Modular Replacement ERV Wheels

As one of the leading research universities in the United States, Georgia Tech has an ongoing commitment to sustainable design and architecture. At their Atlanta campus, the University has invested in advanced Energy Recovery Ventilation (ERV) systems to provide comfortable and energy efficient indoor environments for more than 23,000 enrolled students.

Original Wheel Design Shorten ERV Lifespan

ERVs are an important ventilation strategy for eliminating up to 80% of the outdoor ventilation air moisture and energy loads for many types of applications. To maximize their benefits, it is equally important to specify serviceable components that can be easily maintained for the life of the system. Unfortunately for Georgia Tech, the original ERVs in buildings throughout the campus were specified with single piece (monolithic) aluminum energy recovery wheels that could not be adequately serviced.

After several years of operation, a pair of wheels at a dormitory building became plugged from dust and debris in the airstream. This blockage led to diminished performance and premature failure. Due to their size and single-piece design, cleaning in place with steam or a power washer was the only option. However, doing so came with the risk of water intrusion into the dorms and the unintended removal of a moisture controlling desiccant that is glued to the wheel's aluminum surface.

Seeking a Replacement Wheel Solution

Without a practical or effective means of cleaning, and not wanting to risk further damage to the ERVs, the University's service contractor, Johnson Controls, Inc. (JCI), explored replacement solutions to restore the system to its original performance level. The task of replacing the wheels would be complicated by their location, which did not offer easy access. When the dorm was initially constructed, there was no plan for the aluminum wheels to be cleaned or removed. Swapping the plugged and damaged aluminum wheels with exact replacements would be expensive and time consuming – if not impossible. JCI was eager to identify a simple and cost-effective ERV wheel replacement solution that minimized downtime and did not involve large investments in manpower, crane rentals, and alterations to building walls or the ventilation unit.

Segmented Wheel Design Provides Long-Term Solution

JCI's Atlanta office reached out to Airxchange, a leading supplier of energy recovery wheels. JCI was familiar with the "reliable by design" concept built into each energy recovery wheel made by Airxchange. This unique design originated more than 35 years ago when Airxchange entered the commercial market and learned of the need for building owners and contractors to periodically clean air-handling components for hygiene and efficiency.

To accommodate these aftermarket cleaning needs, Airxchange wheels incorporate a durable, noncorroding polymer heat transfer material that is segmented for easy removal in as little as 15 minutes. They also developed a coating process to permanently embed the desiccant into the polymer without adhesives to eliminate degradation during the cleaning process.

The Airxchange design could easily overcome the maintenance challenges that led to the failure of the original wheels, ensuring that the new replacements would last for the life of the ventilation system. To address the accessibility challenge, JCI utilized Airxchange's fully modular wheel and frame design. All wheels up to 13-feet in diameter are engineered for easy transport and assembly in limited access areas - without cranes or special building openings. This allows Airxchange wheels to be a direct replacement for any manufacturer's wheel, regardless of location. The innovative design was recently recognized with a 2017 Dealer Design Gold Award from The ACHR News.

Direct Factory Support

Christopher Glover, Director of Energy Recovery Restoration for Airxchange, conducted a site visit to carefully plan the installation process. "Our modular design was ideal for this project at Georgia Tech," says Glover. "Both wheels were walked into the mechanical room in pieces and then assembled inside the ERV cabinet, saving time and capital expense." Onsite, an Airxchange technician supervised the installation of the replacement wheels to ensure that they were properly placed and secured. Airxchange also provided Georgia Tech's maintenance contractor with training to operate and maintain the wheels for a lifetime of savings.

A New Partner for ERV Upgrades

"We were pleased to be able to cost effectively restore the performance of the original ERV systems and provide the University with a reliable long-term solution. When one of the old wheels needs to be addressed, they know who to call for a seamless replacement solution," says Glover. Satisfied with the quality and relative ease of the first wheel project, JCI has since replaced an additional 15 aluminum energy recovery wheelswith Airxchange's reliable design.

Visit www.Airxchange.com/case-studies for a complete collection of Case Studies.

About Airxchange

Airxchange has 35 years of extensive experience in the energy recovery industry. Our mission is to design and manufacture high quality products that perform reliably and effectively for the life of the HVAC system, reduce energy consumption, and improve indoor air quality. The addition of high-tech materials and innovative designs to a technology based on fundamental scientific principles has earned us the trust of our valued OEM customers. We will continue to innovate and support our customers to meet evolving market demands for energy recovery ventilation technology. Visit airxchange.com for more info.