



Airxchange Keeping Applebee's "Fresh" and Profitable

CASE STUDY



Applebee's® International, Inc., headquartered in Overland Park, Kansas, has over 1,900 restaurants in 49 states and 16 international countries. With 2019 revenues in excess of \$3.95 billion, Applebee's Neighborhood Grill & Bar is the largest casual dining concept in America.

A typical Applebee's restaurant requires two rooftop HVAC units to provide a comfortable, healthy indoor environment for their patrons. In 1998, the restaurant chain incorporated Airxchange energy recovery wheels into their rooftop design to create a more energy efficient HVAC system. The Result: lower operating costs and improved profit margins.

Value of New Energy Recovery Wheels at Applebee's

Project Date:	1998
Outdoor Air CFM:	3,100(typical/restaurant)
Cooling Capacity Saved:	Approx. 5-9 Tons
Peak Load Reduction:	Approx. 7 kW
*Estimated Annual Operating Savings:	\$2,300-\$4,500

**Based on the following assumptions: 84% Heating Efficiency @ \$0.80 therm & \$0.08 kWh / 0.8 kW/Ton Cooling Efficiency @ \$0.08 per kWh & \$8.00 per kW Demand Charge.*

Energy Recovery for Energy Efficiency

The new HVAC system draws outdoor air through one half of the Airxchange wheel before delivering it to the heating and cooling coils. The system also pulls exhaust air from the dining room and bar area through the other half of the wheel.

Estimated Energy Impact on Typical Applebee's Restaurant

City	Cooling System Capacity Saved (Tons)	Annual Cooling Energy Saved (kWh)	Heating System Capacity Saved (MBH)	Annual Heating Energy Saved	Annual Operating Savings
Boston	5.6	1,425	164	232,285	\$3255
Memphis	8.9	12,309	141	127,003	\$2633
Miami	8.2	27,078	56	7,43	\$2355
Minneapolis	5.6	2,935	216	342,770	\$4564
Kansas City	6.8	8,013	183	233,149	\$3615

Estimates based on 16x7 operation, \$.08/kWh, \$.95/therm, 16x7 operation

By rotating between the two airstreams, the Airxchange wheel recycles heating and cooling energy otherwise wasted to the outdoors.

Reclaimed energy is used to heat and humidify outdoor air in winter and cool and dry outdoor air in summer at an efficiency typically six times that of a system without energy recovery.

Incorporation of the Airxchange wheels also helped Applebee's avoid costly peak electric demand charges by reducing the size of the air conditioning system. Typically, the new system design offloads the conventional AC equipment requirement by approximately 6 tons, lowers the connected load by 7 KW, and saves between \$2000 and \$5000 per year in operating expense.

Efficiently Improving Indoor Air Quality

While these estimated savings and capacity reduction during the design phase are compelling, it is also important to ensure these savings over the life of the system.

To realize these savings, the energy transfer media in the wheel must maintain its ability to transfer heat and moisture. In an application like a restaurant, with smoke, grease, and other aerosols in the air, it is especially important to schedule regular maintenance in order to realize the savings.

Applebee's utilizes a unique Airxchange feature—easily removable and cleanable energy transfer segments to maintain like-new performance.

Innovative Cleaning Method



These segments make it possible for Applebee's to thoroughly clean the energy transfer media. Other energy recovery wheels can only be cleaned by spray rinsing the material in place. Not only is this method cumbersome, Airxchange

Bill Tierney, Airxchange Service Manager, demonstrates the easy segment removal on an HVAC system similar to those used by Applebee's.

determined that it is not effective and does little to restore energy transfer performance.

However, soaking the media overnight, which is only possible with a segmented wheel, proves to be far more effective. Airxchange tests indicate that an overnight soaking restores performance to 90-95% of new.



Airxchange energy transfer media ready for dishwasher cleaning.

In order to expedite the cleaning process, Applebee's decided to experiment with a faster alternate method: putting the segments through the dishwasher. By placing the segments in the dishwasher, Applebee's was able to reduce the cleaning time to just a few minutes. Airxchange testing determined that this method is extremely effective and was found to restore performance to nearly 100%. Additionally, the rugged segments withstood the dishwashing process with no structural deterioration.



Reliable Performance

Applebee's stores are now operating with thoroughly cleaned segments giving the restaurant chain ongoing energy savings. With this innovative maintenance method, these savings will continue to benefit the company for the life of the HVAC system.

"We installed the rooftop HVAC systems years ago and the Airxchange wheels have performed flawlessly."

-Fred Barden, Director of Architecture at Applebee's

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.