

# AIRXCHANGE®

partnering with industry for  
sustainable energy recycling technology

## Case Study: Dillard's Department Stores



### Airxchange Helps Dillard's Eliminate 215kW of Demand and Receive a Utility Rebate

#### Background

Dillard's, which has stores in 29 states, ranks among the nation's largest fashion apparel and home furnishings retailers with annual revenues exceeding \$7.8 billion. In 1997, Dillard's faced the challenge of increasing its outdoor air ventilation rates by a factor of three in order to meet new building code requirements.

These requirements greatly increased the load on the HVAC system, which forced Dillard's to consider a new HVAC system design. Two design alternatives were considered to address this increased load.

#### Energy Recovery Chosen

The first alternative increased the capacity of the DX packaged rooftop units to accommodate the increased load.

The second design alternative incorporated Airxchange energy recovery wheels into the same-sized rooftop units. Airxchange energy recovery wheels, which are ARI certified, eliminate up to 70 percent of the outdoor air load by recycling energy previously used to condition the building space.

This second alternative proved the most cost-effective, streamlined approach and Dillard's integrated this solution into more than 100 stores. According to Dillard's Director of Technical Operations Thomas Goetz, "The Airxchange wheels were easy to incorporate into our HVAC design and have been relatively maintenance free."

#### Palm Beach Store Success

Dillard's 200,000-square-foot Palm Beach, Florida store opened in 2000 equipped with the integrated Airxchange wheel system. This

### Key Statistics - Palm Beach, FL Store

Location:	Palm Beach, FL
Project Completed:	2000
Store Size:	200,000 sq. ft.
Project Scope:	New Construction
HVAC System:	DX Rooftop Units

### Impact of Energy Recovery Wheels

Design Outdoor Airflow:	50,000 CFM
Outdoor Air Load on Design Day (Cooling):	230 Tons
Total Recovered Energy (Cooling):	160 Tons
Peak Load Reduction:	Approx. 215 kW
Annual Energy Savings:	Approx. \$44,000

*"We have realized a 10 to 15% reduction in our total building energy usage while maintaining the indoor air quality that we need for our customers and associates. With this new technology, the cooling that is normally wasted, is now captured and transferred back into the building."*



Thomas Goetz  
Director of Technical Operations  
Dillard Store Services, Inc.

two-story building required approximately 50,000 cubic feet per minute (CFM) of outdoor air ventilation and had a total design cooling load of 760 tons. The Airxchange wheels reduced the load by 3.2 tons per 1000 CFM or approximately 160 tons.

The department store chain soon learned that this load reduction also offered powerful economics. Because the reduced cost of the 160-ton smaller HVAC system offset almost all of the added Airxchange wheel cost, Dillard's net capital expenditure for this integrated system was very low. The large operating savings from this more energy efficient system rapidly paid back the small up-front investment. The chart below outlines the estimated costs and savings for the Palm Beach store.

## Estimated Savings for 50,000 CFM Of Outdoor Air Ventilation

COOLING CAPACITY REDUCTION (TONS)	HEATING CAPACITY REDUCTION (BTU/H)	NET CAPITAL EXPENDITURE	15 YEAR OPERATING SAVINGS	ANNUALIZED RATE OF RETURN
160	1,215,000	\$7,400	\$658,000	593%

### Utility Takes Notice

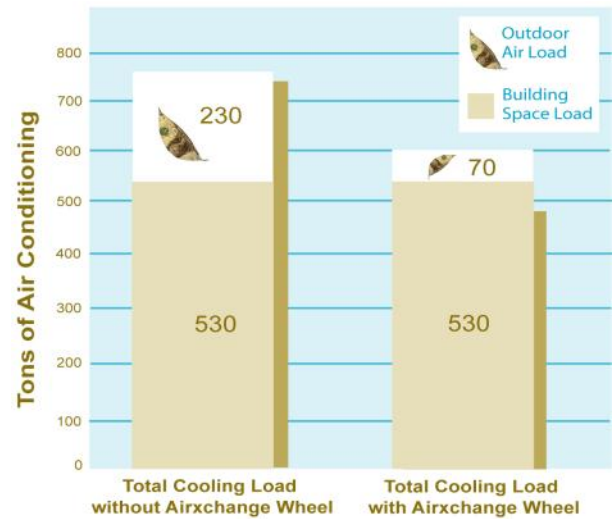
Another benefit of Airxchange wheels being a part of an HVAC system is reduced peak electrical demand, a revelation that caught the eye of executives at Florida Power and Light. Airxchange wheels reduced the peak electrical demand of the Palm Beach store by an estimated 215kW. This store's proven success resulted in Florida Power and Light providing significant rebates to Dillard's for using HVAC systems featuring Airxchange wheels.

Given the array of benefits associated with using Airxchange energy recovery wheels, it should come as no surprise that they have since become the standard for all Dillard's stores.

*"The energy recovery technology allows customers to install smaller air conditioners that use less energy. Therefore, we have to supply less energy during peak times, which helps us manage our energy supply responsibilities."*

Chuck Holcombe, Dillard's Account Manager  
Florida Power and Light

## Estimated Load Reduction at 50,000 CFM



### About Airxchange

*Established in 1982 Airxchange has extensive experience in the design, manufacture, sale, and support of energy recovery ventilation components to manufacturers of Heating, Ventilating and Air Conditioning (HVAC) equipment. The company played a pioneering role in the formation of industry standards and third party performance certification programs, which validate their transformative technology. Airxchange technology is now widely available through leading HVAC manufacturers.*

For more information about Airxchange, please visit [www.airxchange.com](http://www.airxchange.com).