TCF
TWIN CITY FAN

Quick Facts

Industry
Education

Application
General HVAC

Customer
University of Washington

Twin City Fan Representative
Johnson Barrow Inc.

Challenge
Energy efficient standards, diversity of fans needed, large project

Solution
DCRU centrifugal roof exhauster with electronically commutated motors for improved energy efficiency

Result
Enhanced energy efficiency

University of Washington – Energy Efficient Fans and Motors

Overview

The Husky Union Building on the University of Washington campus was constructed in 1949. It houses numerous student activities throughout the academic year, and was recently slated for a major renovation to better serve the needs of the campus and student body. Compared to today's standards, the existing building was not very energy efficient, making increased energy efficiency one of the core objectives for the renovation. Every effort was made to make this building a state-of-the-art example of energy efficiency – from reworking the roof, adding new features to the building and upgrading all of the mechanical equipment. A variety of Twin City Fan products, including the DCRU Centrifugal Roof Exhauster with energy efficient electronically commutated motors (EC motors) were used to help reach this goal.

Challenge

One of the most significant challenges of this project was finding ways to make the building more energy efficient – with the hopes of achieving LEED Gold Certification. Because Washington has some of the most stringent building codes for energy efficiency, determining opportunities to make every facet of the project as "green" as possible was critical – right down to the fans and their motors. This push necessitated the use of the most technologically advanced, energy efficient fans and motors available.

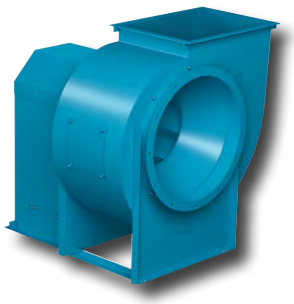
Another challenge was the sheer diversity of fans needed. The Husky Union Building houses everything from office space to cafeterias to ballrooms that are used to host around 4,200 big events throughout the year. Each of the rooms required different configurations to meet the various air moving applications – including kitchen

Model DCRU
Centrifugal Roof Exhausters with Energy Efficient EC Motors

Model BSI
Square Inline Centrifugal Fans

Wheel Sizes
8" to 40"

Performance
Airflow to 27,400 CFM
Static pressure to 3.5" w.g.



Model BAV
Utility Sets

Wheel Sizes
12.25" to 36.5"

Performance
Airflow to 32,100 CFM
Static pressure to 8" w.g.

exhaust, ventilation and general exhaust. Versatile solutions were needed – such as kitchen hoods that could handle heavy, grease-laden air and exhaust fans that would operate quietly so as to not distract students and faculty.

Finally, the magnitude of the project and its aggressive timeline posed another challenge. The building is in the middle of an active campus, so extremely short timelines for delivering and off-loading equipment had to be followed. Extra care had to be taken to stay in close communication with the contractor, factory representatives and drivers to ensure the right fans were delivered to the right places, at the right times.

Solution

A variety of Twin City Fan products made up a comprehensive solution. Among them were the DCRU Centrifugal Roof Exhauster, which carries the AMCA Fan Efficiency Grade (FEG) seal and energy efficient EC motors. The DCRU is designed for roof mounted exhaust of relatively clean air for applications that require the exhausted air to be moved up and away from the building, and where re-entry into the building supply air is possible. Says Rand Conger of Johnson Barrow Inc., “With an application that uses a fan on the roof, there are only a few things you can do to increase energy efficiency because it’s a very set process. That’s what makes the EC motors so valuable – with them, we’re able to significantly increase the energy efficiency of the fan.”

In addition to the DCRU, a diverse mix of other fans were used, including:

- BAV backward inclined airfoil utility sets for increased efficiency and reduced sound levels
- BSI and DSI square inline centrifugal fans used for duct applications
- BCRU centrifugal roof exhausters for roof-mounted exhaust
- TL inline/cabinet ventilators

Benefits of EC Motors

Twin City Fan products offered the needed energy efficiency enhancements to help meet the goals of the project. The EC motors used in the DCRU centrifugal roof exhauster were among the most energy efficient products used. The high efficiency EC motors are a recent addition to the Twin City Fan commercial product lines and customers are already seeing the benefits.

These motors provide expanded and improved controllability, while operating at reduced speeds without compromising motor efficiency. In addition, the EC motors allow for very efficient fan balancing. Simply turning a dial adjusts the RPM, making it incredibly easy to balance the system, which can speed up the commissioning of the building.

Additional Benefits of EC Motors

- Efficiencies up to 85%
- Constant efficiency as the motor speed is varied
- Up to 66% energy savings over traditional PSC motors
- Performance range comparable to a belt drive fan with reduced maintenance benefits of a direct drive fan
- 80% usable turndown range as compared with 40% maximum on PSC motors
- Soft start gives fans smooth, quiet start
- Lower operating temperatures result in longer life and reduces energy consumption
- Heavy-duty ball bearings are permanently lubricated
- Elimination of VFD results in lower initial cost

Summary

With the introduction of energy efficient EC motors, Twin City Fan once again demonstrated its position as an industry leader in fan manufacturing. The energy efficient fans supplied by Twin City Fan helped contribute to the success of the University of Washington project, helping them "set the bar" for energy efficiency and green building within the UW system. These fans will continue to serve as a reliable, energy efficient solution for the campus well into the future.

Twin City Fan & Blower has the engineering and manufacturing capabilities to accommodate virtually every conceivable application. We have completed thousands of successful installations worldwide and have a proven track record for tackling the most technically complex and unique applications.

We separate ourselves from the competition by offering a greater breadth of products and quickly adapting to the needs of our customers. This is truly a testament to our company philosophy – respond to the needs of the customer, the first time, every time.

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What Is Fan Efficiency Grade (FEG?)

- **AMCA Standard 205 – Energy Efficiency Classification for Fans**
- **FEG is an Equipment Efficiency Standard for Fans**
- **FEG is AMCA's Energy Standard (or Green Initiative) to help the Green Buildings Community understand potential energy savings**