

SEMCO Fresh Air Ventilator to Joplin R-VIII School District



7,000 students and faculty attend at Joplin R-VIII School District's elementary, middle, and high schools. All the classrooms in the Joplin schools are served by its own energy recovery/rooftop unit combination, allowing teachers complete control over the climates in their rooms.

■ FACTS

Customer:

Joplin R-VIII School District's elementary, middle, and high schools, Missouri, USA.

Need:

Precondition fresh air, thereby reducing the overall heating and cooling loads.

Solution:

SEMCO Fresh Air Ventilator

Preconditioning essential for good classroom climate

In years past, the students and faculty at Joplin R-VIII School District's schools simply had to grin and bear it during hot and humid days of the year. SEMCO's Fresh Air Ventilator is a cost-effective heating/cooling system perfect for schools, giving the teacher full control of the air quality in each classroom.



School facilities can be challenging to air condition because they require tremendous amounts of fresh air to be imported into the facility in order to meet codes established by the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE). Packaged rooftop units are commonly used to cool and dehumidify classrooms, however, packaged rooftop units alone can't handle that amount of fresh air and still maintain conditions that are comfortable. Warren Smith & Associates, a Tulsa, Oklahoma-based engineering firm, designed a system that combines energy recovery technology with conventional packaged rooftop units to cost-effectively handle large cooling loads.

"With the packaged unit, which is the most cost-effective heating/cooling system for a school, you need to precondition that air," says Smith. SEMCO's Fresh Air Ventilator unit is specifically designed to work with the packaged rooftop unit, and combining the two is an inexpensive way to air-condition schools and meet ASHRAE codes.

Connected to each rooftop unit is a Fresh Air Ventilator, that uses a desiccant wheel to precondition outside air before it reaches the rooftop unit.

The desiccant wheel rotates between the exhaust airstream and the fresh air supply and, in doing so, transfers heat and humidity from the incoming fresh air to the exhaust airstream.

"Instead of introducing 100-degree Fahrenheit air to the rooftop unit, the SEMCO unit knocks it down to somewhere between 81 and 83 degrees, which is a lot easier for the rooftop unit to handle and does not cause a dramatic fluctuation in temperature and humidity," says Smith.

Even after the classroom temperature is satisfied and the compressor shuts off, the system is still importing fresh air that has been dehumidified and cooled by the desiccant wheel, which provides a more consistent, comfortable climate in the schools.

During colder months, the desiccant system works in reverse to transfer warm, moist energy from the building's exhaust airstream to the cold, dry fresh air coming into the system. This allows the new combination units to maintain more comfortable space conditions than before.

SEMCO

SEMCO is a unique indoor environment products manufacturer serving the key disciplines of air distribution, noise abatement, temperature, and humidity control in the commercial and industrial building markets. SEMCO was acquired by Fläkt Woods in 2007.

Fläkt Woods Group

Fläkt Woods is a global company providing solutions for ventilation and air treatment for buildings as well as fan solutions for Industry and Infrastructure applications.

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