

## *Energy recovery solution keeps operating costs down for Red Wings High School in Minnesota*



Energy recovery is the key to keeping Red Wing's operating costs low. The solution from SEMCO saves energy consumption and money for the High School.

The annual savings are approximately \$120,000 compared to the previous ventilation system.

### ■ FACTS

**Customer:**

Red Wing High School  
Minnesota, USA

**Need:**

Cost efficient, clean and fresh air in all buildings. Noise control was an ancillary indoor air quality issue.

**Solution:**

SEMCO's EXCLU-SIEVE® heat recovery wheels and silent round spiral duct.

# "The annual reduction in energy charges are more than \$120,000"

The fresh air ventilation rate for a school setting is 20 cfm/student. This value is based on ASHRAE standard 62, Ventilation for Acceptable Indoor Air Quality. Meeting the ASHRAE standard threatened to cause an insupportable financial burden for the school's budget.

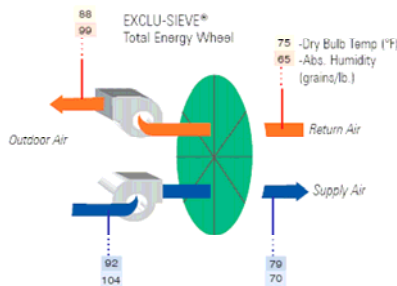
Suggested solutions included a constant volume system instead of a VAV system, or individual outdoor units for certain spaces in addition to a VAV system. These options would have met the expectations for IAQ but were still cost and space prohibitive. Energy efficiency and IAQ seemed to be mutually exclusive.

Noise control was an ancillary IAQ issue. Red Wing High School's floor plan placed the mechanical room near acoustically sensitive areas such as the media arts, music and theatre arts locations. Internal duct insulation for sound attenuation would be counterproductive by IAQ standards. Attenuators involved additional costs to be avoided, if possible.

The right answers for Red Wing's concerns come from one manufacturer. SEMCO is the industry leader for providing abundant fresh air in the most energy efficient manner in today's HVAC market. As well, the company manufactures round duct work known for its performance benefits.

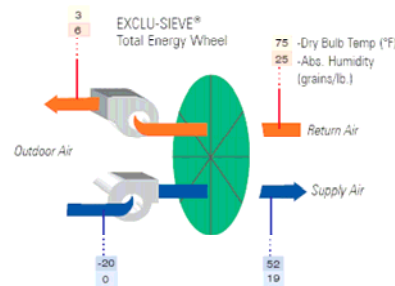
Energy recovery is the key to keeping Red Wing's operating costs low. SEMCO's EXCLU-SIEVE® wheels accomplish two objectives. They supply the 20 cfm per student, and they transfer sensible and latent energy between two airstreams.

## Flow Schematic - Cooling Mode



The outdoor air passes through the Total Energy Wheel and is cooled and dehumidified.

## Flow Schematic - Heating Mode



The outdoor air passes through the Total Energy Wheel and is heated and dehumidified.

The vapour exchange is performed by a 3Å (Ångström) molecular sieve desiccant specially suited to the purpose. At Red Wing High School, on a heating design day, outdoor air of -20°F is preheated to 52°F by the energy recovery unit. On a summer design day, 92°F outdoor air is cooled to 79°F.

Round spiral duct from SEMCO distributes the building's air supply and exhaust. It is strategically routed to reduce noise levels. In addition, using the round duct instead of rectangular duct saved as much as \$70,000. SEMCO works to make the best solution a reality for Red Wing High School.

### Summary of benefits.

- Energy recovery effectiveness in excess of 80%
- Reduced boiler plant requirements by 400 boiler hp
- The system is easily serviced, and has full man-height access
- Chilled and heated water piping was reduced
- Heating coils in the air handling units were able to be disposed of providing a \$100,000 cost saving

### 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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