

RenewAire case study: Bob Johnson Hockey Training Facility

Ventilation is important in the University of Wisconsin hockey team's new training facility in Madison, WI. A RenewAire enthalpic heat exchange system was selected for this state-of-the-art facility.

In designing the training facility, which is essentially an underground tunnel between two ice rinks, engineer Dan Dehnert included an energy recovery system. He knew that all the exhaust air from the locker room was to be ventilated, and wanted to recapture some of the heat.



The subcontractor for the ventilation system, Advanced Temperature Technicians, was asked to see if costs could be reduced for the project, since it was being financed with public dollars. Advanced Temperature determined costs could be reduced with the use of a different kind of heat exchange system than the wheel type in the original specifications. They knew Mitsubishi's RenewAire system would be less expensive and highly efficient at the same time.

Altech Energy of Madison, the North American representative for RenewAire, worked with the engineer and contractor to develop an efficient installation plan. Altech could meet the engineer's specifications and help Advanced Temperature take advantage of RenewAire technology to simplify duct design in the mechanical room.

“RenewAire not only saved money, but is a simpler system with less moving parts, while still achieving high efficiency.”

— Bill Packert, VP

Advanced Temperature Technicians

How the system works

The heart of the system is the RenewAire core. RenewAire is a fixed-plate, cross-flow heat exchanger made of a proprietary resin-paper composite. The exhaust and the fresh air streams are



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kept physically separated by the composite plates. The many plates are spaced very close together, providing a very large heat transfer surface area within an individual core. The system for the training facility contains eight E-750 cores arranged in two vertically stacked C-3000 cabinets with four cores per cabinet.

Stale air from the facility is drawn through the cores by an exhaust blower that discharges this air to the outdoors through a ventilation “chimney.” A second “chimney” is used to draw fresh air from outdoors through the core and supply the fresh air to a Carrier packaged heating and air-conditioning unit, which conditions the air for the facility. With the RenewAire system, the locker room odors are reduced and the humidity is kept at a consistently comfortable level.

The total airflow for each air stream is approximately 4,390 cubic feet per minute. The system is able to transfer approximately 76% of the temperature differential between the two air streams. Additionally, and in summer, more importantly, approximately 65% of the humidity differential is transferred. This total, or enthalpic, energy transfer results in a cooling load reduction at design conditions of 12.2 tons of air-conditioning capacity and more than 400,000 BTUs per hour of heating capacity reduction. The RenewAire cores simply sit in the ductwork system, tempering the incoming air, with only minor maintenance required to keep the system clean.

Project Summary	
Locker Room Ventilation	Madison, WI
4390 CFM	Installed 1994
Peak Load Reduction	
Heating 400,000 BTUh	Cooling 12.2 tons