

Newsletter Archives

[September Issue](#)
[October Issue](#)
[November Issue](#)
[December Issue](#)

Project Spotlight

The Renschler Company was selected by the Midwest Family Broadcasting Group to provide Leadership in Energy and Environmental Design - Existing Building (LEED-EBOM) certification services for their 35,240 square-foot broadcasting facility located at 730 Ray-O-Vac Drive in Madison. Seven (7) radio stations broadcast from studios in the building. These broadcast studios are supported by open-office marketing areas and private office space.



January 2013

CREATE YOUR OWN ECONOMY

A Publication of The Renschler Company

Renschler HVAC Design Saves Energy, Lots of Energy

By Eric T. Truelove, P.E., GGA, LEED AP BD+C

When Madison Investment Advisors (MIA) wanted to expand their facility, they wanted the addition to be a model of energy-efficiency and hired Doug Kozel of KEE Architecture to lead the effort. Doug hired The Renschler Company to design the heating, ventilating, and air-conditioning (HVAC) system and requested that the system incorporate ground loop heat pumps. The addition has been occupied for over a year and recently received a Focus on Energy Award of Excellence from the Wisconsin Green Building Alliance (WGBA).

Project Description

The MIA addition is a 10,775 square-foot office expansion located at 550 Science Drive in Madison, Wisconsin 53711. It is connected by an enclosed bridge to an existing facility designed earlier by the same architect. Two above-grade floors provide office space and a two-story atrium. A below grade level is used for mechanical systems and storage. The addition is occupied by 33 employees who typically work 50 hours each week. KEE Architecture included generous amounts of glass so occupants could enjoy natural daylight as well as the surrounding views with mature trees and greenery. A picture of the finished facility was provided by KEE Architecture and appears below:

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Figure 1: Southeastern Exposure (Courtesy of KEE Architecture)

Interactive Design

Working with the Renschler Company, KEE Architecture specified high-performance, triple-glaze glass assemblies for much of the building. Although these glass assemblies added to the first cost, the Renschler Company modeled the peak heating and cooling requirements to determine that the added cost of upgrading to high-performance glazing was more than offset by the cost reductions that came from smaller heat pumps and a smaller vertical ground loop. Furthermore, by designing a building with overhangs on the southern exposure and a brise soleil on the connecting bridge, both pictured previously, KEE Architecture allowed for day-lighting and views while reducing unwanted glare and heat gain.

Energy Use

In addition to generous views of the outdoors and having an open day-lit work environment, MIA enjoys low utility bills in their addition. Energy Star® results for the first 12-months of energy bills appear below:

OMB No. 2068-0147

STATEMENT OF ENERGY DESIGN INTENT
November 2, 2012

FACILITY INFORMATION & CHARACTERISTICS		Design Energy (kBtu) ¹ Electricity - Grid Purchase 375,732	
Facility Name Madison Investment Advisors Addition	Location 550 Science Drive, Madison, WI 53711 United States		
Space Type: Office	Total Floor Area: 16,775 sq. ft. Total Gross Floor Area: 16,775 Sq. Ft.		

RESULTS FOR ESTIMATED ENERGY USE:	DESIGN	MEDIAN BUILDING	ESTIMATED SAVINGS
EPA Energy Performance Rating (1-100) ¹	87	50	37
Percent Energy Reduction (% E)	40	0	N/A
Site Energy Use Intensity (kBtu/sq.ft.)	35	59	24
Source Energy Use Intensity (kBtu/sq.ft.)	117	157	80
Total Annual Site Energy Use (kBtu/yr)	378,732	836,950	257,218
Total Annual Source Energy Use (kBtu/yr)	1,264,605	2,124,074	859,469
Total Annual Energy Costs (\$)	\$ 12,943	\$ 21,733	\$ 8,790
Pollution Emissions (metric tons/yr) ²			
CO ₂ e	85	144	59

Figure 3: Actual Energy Use (Courtesy of Energy Star)

The addition scored in the upper 87th percentile which means energy use was lower than 87% of similar office buildings in this location. When compared to an average office building of the same size, the MIA addition reduces energy use by \$8,800 and greenhouse gas emissions by 58 tons each year while achieving an exceptional work environment and outstanding indoor air quality.

Conclusion

The successful outcome of this addition came from the top down.

MIA, a firm that specializes in helping people to invest their money successfully, recognized the benefit of having an addition with low utility bills and also showed that their connection to the surrounding environment was more than just a matter of aesthetics, they wanted to make a real difference. KEE Architecture immediately set out to design a facility that would link occupants to the outdoors with good daylight, open spaces and extraordinary views, but they always kept energy efficiency in their design by using good shading techniques, specifying high-performance glazing, and recognizing the benefits of ground loop heat pump systems. The Renschler Company already had an established track record combining dedicated outdoor air systems with high-efficiency heating and cooling systems to achieve exceptional energy performance without compromising indoor air quality. By putting all of these elements together in an integrated design, MIA achieved a building that meets all of their objectives for comfort, health, and energy efficiency.

For additional information on this HVAC system, contact Eric Truelove at 608-332-8444 or etruelove@att.blackberry.net.

Renschler's "Create your own Economy" newsletter began in September 2012 with a simple premise: There is an immediate payoff to high performance, off-the-shelf building amenities that everyone can enjoy. Immediate in that the monthly energy savings are more than the monthly cost for the improvements, **starting with the first month.**

I invite you to review the initial 5 newsletters keeping in mind that there is a huge difference between green claims and green results.

Our next newsletter is a white paper on green, sustainable and high performance. Let us know if you would like a certain question or concern addressed.

Sincerely,



A handwritten signature in black ink that reads "Bernie Lange".

Bernie Lange, President



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