



A Green Building

for a Green Company

BY HANK KRUSEC

Committed to practicing what they preach, this manufacturer's new facility is built to achieve LEED certification.

WHEN WINERGY DRIVE SYSTEMS, a wholly owned subsidiary of Siemens, needed to build a manufacturing facility to assemble gearboxes for wind turbines, company president Parthiv Amin had a vision. He wanted the building to be as environmentally friendly as the renewable energy products it helps make.

"We wanted to practice what we are preaching," said Amin.

The result? A building constructed largely using recycled steel and designed with features that are expected to save more than \$85,000 annually in energy costs and reduce annual water use by 250,000 gallons. The Elgin, Ill., plant opened in June and is expected to be one of the first manufacturing sites in the state to receive LEED certification.

In addition to saving water and electricity, another benefit of Winergy's plant design and construction, as with similar green

buildings, is how they improve working conditions. Research shows a building with natural light and fresh air also helps employees' health and morale..

"The biggest cost savings is with the people," says Doug Widener, executive director of the U.S. Green Building Council's Chicago chapter. "If you can reduce sick days, reduce turnover and in turn, reduce the need for training, the return on investment is huge."

Choosing Steel

In the design phase, the contractor and structural engineer quickly realized steel would be the best option for several reasons. The building is about 45 ft high and it needed to support cranes that would move the length of the building to assemble the gearboxes.

"I've done crane buildings before, but not this big and not this



McShane-Fleming Studios

Opposite page: Winergy's new steel-framed three-bay manufacturing facility offers environmental benefits today and plenty of flexibility to expand in the future.

Below: Structural steel framing was the obvious choice for Winergy Drive Systems' new environmentally friendly manufacturing facility in Elgin, Ill.



Winergy Drive Systems

tall,” said structural engineer Bruce Randall, owner of Structures Unlimited, Crystal Lake, Ill. He used RAM Structural System for the designs and RAM CADstudio for the details, working to determine exactly how many cranes and of what size could fit in each bay to maximize capacity. Randall designed the crane rail supports (W30x99 and W27x94) to be A992 material supplied by Nucor. “Concrete would have never worked for this.”

In addition to its strength, structural steel offered two additional benefits. Because the steel framing for the crane supports is at the building's perimeter, it also could be used to support the outside walls, enabling the use of precast concrete panels. Should Winergy ever decide to expand, the panels can easily be removed and reused.

The structural steel was placed fully inside the exterior walls to increase the building's overall thermal performance and to allow for

Hank Krusec is the district sales manager for Nucor Vulcraft Group in the Chicago area. He's estimated and sold steel joists, joist girders and metal deck products for Vulcraft for the past 27 years.



The turbine and gearbox perched atop a tower to harness wind energy is larger than one might first think. Just for comparison, the rotor blades shown here being hoisted into place at the Red Hills Wind Farm in northwestern Oklahoma are each 118 ft long.



Having the structural steel framing entirely within the structure is one way to optimize the thermal performance of the building envelope.

the interior operations to be changed out as manufacturing process is transformed. This built-in flexibility allows the manufacture to retool his processes without affecting the building exterior—saving time and money. Placing the steel inside the building shell also reduces the movement of cold winter and hot summer temperatures to in the interior of the building and thereby reduces the energy required to heat and cool the building. Both of these benefits align with the project goal of an environmentally friendly building.

Fighting for Each Point

Some of the green features were easier to include than others. As part of the construction, for instance, the steel fabricator, Arlington Structural Steel, Arlington Heights, Ill., bought more than two-thirds of the building steel from Vulcraft, Nucor-Yamato Steel and other Nucor mills—largely because the steel was made from recycled scrap.

“At least a third of the major jobs we’re working on are LEED jobs, and if we can’t meet the criteria, we’re out of work,” said Arlington’s vice president Lee Clarbour. “You’ve got to fight for each (LEED) point, and if you get recycled content from the fabricators and the precasters, that’s two valuable points right there.”

Other aspects of the project were more unusual for a 154,000-sq.-ft industrial site. The contractor, Elgin, Ill.-based Pancor Construction and Development, worked with Silva Architects and sustainability consultants from GreenWorks Studio, Chicago, on several innovative ideas. Among them:

- Lowering energy use by an estimated 14%, partly through an efficient heating and cooling system from Siemens Building Technologies that regulates the building’s indoor environment by monitoring the outside temperature and where people are located inside the building.
- Diverting 75 percent of the construction waste so it can be reused rather than hauling it to a landfill.
- Using a stormwater management system that pre-treats all water runoff on-site and gradually reintroduces that water back into the watershed.
- Reducing water use by more than 250,000 gallons a year, partly by installing water-saving plumbing fixtures and choosing to landscape with native species of plants that, once established, will not require irrigation.



More than two-thirds of the steel needed for Winery Drive Systems’ manufacturing facility came from Vulcraft, Nucor-Yamato and other Nucor mills, largely because the steel was made from recycled scrap. The recycled content is expected to help the project become one of the first manufacturing sites in Illinois to receive LEED certification.

Winery’s workers won’t notice all the environmental touches, such as the water-saving measures and the recycled steel. But the company president says employees have responded to features such as the natural light from eye-level windows and the privileged parking spaces designated for workers who carpool or drive fuel-efficient cars.

“It makes a huge difference to work in a building designed like this,” Amin said. “We are changing behavior. And bottom line: this was the right thing to do.” **MSC**

Project

Winery Drive Systems manufacturing facility, Elgin, Ill.

Architect

Silva Architects, Elgin, Ill.

Structural Engineer

Structures Unlimited, Crystal Lake, Ill.

General Contractor

Pancor Construction and Development, Elgin, Ill.

Steel Fabricator

Arlington Structural Steel Co., Arlington Heights, Ill. (AISC Member)