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LEED certification is providing state buildings with many firsts while proving they ‘walk the environmental walk.’

By Jamie Welch

In today's world, for companies to be considered environmentally friendly, they have to walk the walk before talking the talk. By constructing ecologically minded buildings, Wisconsin organizations are taking a giant green step forward and investing in their long-term sustainable futures.

To officially qualify as green, a building registers with the U.S. Green Building Council (USGBC), a nonprofit advocacy group issuing Leadership in Energy and Environmental Design (LEED) ratings at various levels and costs, which start with the \$10,000 application fee.

The buildings highlighted in this article range from those earning the coveted Platinum and Gold status, to those still waiting for their LEED designations. Pleasing to the eye and ergonomic for those working within, these structures range from a senior high school to a car dealership; a construction company to talent recruiting business; a potato chip factory to a nature center, yet common traits prevail. They harness solar energy and are built with recycled, local materials to reduce their carbon footprint, which, in at least one case, is zero.

Aldo Leopold Legacy Center, Baraboo

Considered to be the father of wildlife management, Aldo Leopold (1887 - 1948) was a ecologist, forester, and author who helped develop modern environmental ethics. Doubtless, this legendary Wisconsin environmentalist would be proud to be the namesake of the Aldo Leopold Legacy Center, a net-zero-energy, carbon-neutral structure near Baraboo that might be the greenest building ever.

Born on the Mississippi in Burlington, Iowa, Leopold served for 19 years in the United States Forest Service. In 1924 he joined the Forest Products Lab in Madison, Wisconsin and started a career as a wildlife surveyor and professor of game management at UW-Madison. He lived in a modest two-story home close to the campus with his wife and children and taught at the university until his death in 1948 from a heart attack while fighting a brush fire.



In 1982, Leopold's children established the Aldo Leopold Foundation in response to the growing interest in their father's legacy. For more than 20 years, the foundation managed the original Leopold farm and "Shack," a re-built chicken coop along the Wisconsin River the family used for weekend and holiday retreats.

Last year the Shack got a befitting upgrade — the beautiful 12,000-sq.-ft. Aldo Leopold Legacy Center that recently received the highly sought after LEED Platinum Certification, as well as an award from the USGBC as the first net-zero-energy building in Wisconsin and the first carbon-neutral building certified by LEED. The center's annual energy demand is matched by the output of clean, renewable energy systems on site. In fact, the structures pro-

duce approximately 115% of their annual building energy needs.

"Ultimately, what I have seen here in design, local commitment to the building and its ability to teach people the principals of sustainable design, this does it all," said USGBC President Rick Fedrizzi.

Designed by the Kubala Washatko Architects and constructed by The Boldt Co., the center is environmentally friendly, literally from the ground up. In 2006, wells were drilled deep into the ground and a closed loop of piping went in below the frost line, using the earth's stable temperature to pre-heat or pre-cool water relative to the air temperature.

Locally harvested red maple, cherry, and oak logs were used to create the columns, beams and tongue-and-groove paneling. The buildings are oriented on the site to take advantage of the sun's position during Wisconsin's changing seasons — a thermal flux zone along the southern exposure provides passive solar heating in winter and shelters the building core from the summer sun. Operable windows take advantage of fresh breezes in summer and ward off winter winds with inside shutters.

The energy system includes a roof-mounted 39.4 kW photovoltaic solar array that annually produces 61,000 kWh, or 110% of the center's energy needs, plus the amount used annually by six Wisconsin households. A geothermal heat exchanger is used in the water-based heating system.

Bottom line: The Aldo Leopold Legacy Center might be the greenest building in the state, an achievement the building's namesake would be proud of.

Tri-North Builders' Corporate Headquarters, Madison

Founded in 1981 in Madison as a general contracting firm, Tri-North Builders has grown immensely with its focus on commercial construction. A true green builder with operations in 47 states, Tri-North's new LEED Gold Certified headquarters in Madison is a showpiece. As pleasing to the eye as it is to Mother Nature, the 55,000-sq.-ft. building saves about 227,496 kilowatts of energy per year, preventing 316,675 pounds of carbon dioxide from being released into the atmosphere.

Many of the ideas are no-nonsense. For example, the pervious concrete in Tri-North's parking lot allows water to be stored in a recharge bed below the surface. Stunning floor-to-ceiling windows light 70% of the interior spaces while outdoor sensors raise and lower shades to assist the radiant flooring system. The chemical-

free cooling system uses kinetic energy to keep the offices at a comfortable temperature all year.

Insulation and bathroom installations are a far cry from traditional. Made from recycled blue jeans, the insulation absorbs sound, and doesn't itch or harm the environment like fiberglass. Waterless urinals, as well as toilets with separate solid- and liquid-waste buttons save up to 400,000 gallons of water per year, said Tom Thayer, Tri-North president and CEO, and the owner of the building.



"Sure there are costs to getting LEED Certified, but the pay-back is about seven to 10 years, and that number is decreasing with each green building we construct," Thayer said. "Using cotton from recycled jeans cost only a few cents more but the energy savings are big. The Sloan bathroom equipment only added about \$40 to the cost of each bathroom, while at the same time we will be saving \$700 per year on our water bill."

The upper-level flooring comprises bamboo that rapidly renews in the environment, recycled yard carpeting and recycled rubber in the employee exercise room. Cork reclaimed from wine bottles is used in the lower level flooring. Topping off everything is the green roof, which contains vegetation that reduces the amount of water run-off through a natural absorption process.

Manpower World Headquarters, Milwaukee

When the 9th Annual MANDI (Milwaukee Awards for Neighborhood Development Innovation) event was held in March, Manpower Inc.'s World Headquarters won the Building Blocks Award for its contribution to the rebuilding of downtown neighborhoods. Gilbane Building Company of Milwaukee completed the construction of the project, which is on target to become LEED Gold Certified.

Along with helping transform a distressed neighborhood — Manpower's presence is expected to contribute more than \$2 million per year to the downtown economy and \$100 million in surrounding development — the building is environmentally friendly.



"Gilbane was proud to be a part of building sustainable headquarters for Manpower," said Gary Grunau, Gilbane senior vice president. "Our firm is committed to environmental responsibility."

Multiple LEED Gold specifications were incorporated into the design and construction. Daylight and views are provided to more than 90% of the work spaces. Water efficient plumbing fixtures result in 41% water-use reduction. Low-volatile, organic-compound materials were specified to improve indoor air quality, and more than 10% of the building materials contain recycled content. Additionally, more than 50% of the wood used on site was harvested from rapidly renewable forests.

Efficient design uses 25% less energy and 40% less water than a typical building of smaller size. Finally, a major design element is the outdoor plaza that opens the city to Manpower employees, who indeed are a welcome addition to the neighborhood, which now has a much brighter future.

Smart Toyota Dealership, Madison

While Toyota strives to build green cars, Smart Motors has built a new 100,000-sq.-ft. sales and service center in Madison that will be the largest Toyota dealership in the region. It also is environmentally sound.

Kenneth F. Sullivan Construction, a design-build construction firm that has been working in Madison for 70 years, provided its service to Smart with plans and methods of being a more eco-friendly dealership.



"This project reflects both our commitment to our customers and the growing demand for Toyota products," said J.R. Smart, president and CEO of Smart Motors. "A significant improvement is the building's new heating system. We'll actually recycle old oil from the service center to heat the facility."

The lighting for the entire inside of the building is green. High-performance T8 lights, which use 25% less energy, ceramic metal halide display lighting, which uses 67% less power, and compact fluorescents that burn 60% less electricity were installed.

"The estimated energy savings for the service department alone is over 20,000 kW hours per year," said Rob Rudolf, engineer with Electric Construction Inc., which was heavily involved with the project. "To put this into perspective, this is enough energy to supply power to four average homes for an entire year."

Other eco-friendly amenities include bio-retention devices, including a storm-water infiltration system and rainwater infiltra-

tion strips in the parking lot. South facing windows with tinted glass, and high-efficiency furnaces and ductwork save energy in winter while reducing solar heat gain in the summer.

Northland Pines High School, Eagle River

Environmental science teachers at Northland Pines High School in Eagle River don't have far to go for field trips. Their new 253,000-sq.-ft. building is the first LEED Gold Certified public high school in America.

Northland Pines District Administrator Mike Ritchie noted that morale has improved for both staff and all 600 students, who take pride in the building built by Hoffman LLC, a Wisconsin planning, design and construction firm that's been a pioneer in green building design.

"The LEED Gold Certification exceeds our expectations because all along our goal was for a silver certification," Ritchie said. "It's nice to be a front-runner when it comes to having an environmental school."

According to Mark Hanson, director of sustainable services for Hoffman, 83% of all the building wastes were recycled, including those from demolition of the 27-year-old structure the new school replaced. In fact, a crew of Amish workmen helped salvage large laminated beams and removed and re-milled wood flooring. More than half of the materials used were manufactured within 500 miles of the construction site to reduce fuel consumption and pollution associated with transportation.

Daylight harvesting is achieved with high ceilings and strate-

gic placement of gray Low-E windows that add daylight to classrooms without unwanted glare or heat gains and losses. Water-reducing bathroom fixtures, waterless urinals and the use of climate-appropriate plants to eliminate permanent irrigation systems will create annual water savings of 35%.



NORTHERN PINES HIGH SCHOOL

Northland's sustainable site design goes hand in hand with its water efficiency. Two large detention basins retain all storm water on site, landscaping employs native species, priority parking encourages carpooling or bicycling, and a portion of the land will be protected from future development.

Holding it all together, low- or no-volatile-organic-compound products were specified for adhesives, paints and carpeting, and

How do you build a brand new office facility that costs 20% LESS TO OPERATE?

To find out, you could ask **Pete Roho**, owners' representative for **Thrivent Financial Bank's** new facility in **Appleton**. But since he's a very busy person, he'd probably prefer that you contact **Focus on Energy**, Wisconsin's energy efficiency and renewable energy program. **Focus on Energy** worked with **Thrivent's** architects, engineers and contractors to help them design a high performance facility that's 20 percent more energy efficient than standard new construction. In fact, this new facility alone is saving nearly \$8,000 annually in energy costs.

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carbon dioxide levels are constantly monitored.

“We were sensitive to the environment,” said School Board President Tom Christensen. “Everyone walks into the building and says, ‘Wow.’”

Kettle Foods plant, Beloit

In 1978 Cameron Healy started Kettle Foods in Salem, Ore., with no working capital and a beat-up van selling cheese, roasted nuts and trail mixes along Interstate 5. Still a privately owned firm, Kettle produces all-natural potato chips and trail mixes, and when looking to add a factory to their already existing plants in Oregon and Norwich, U.K., the British owners chose the southern Wisconsin city of Beloit thanks to a \$500,000 incentive from the State. Completed last year, the facility is the first LEED Gold Certified manufacturing plant in Wisconsin.

Designed and built by ACS of Madison, the 73,000-sq.-ft. building processes 50 million pounds of Russet potatoes. Along with adding about 100 new jobs and an \$18 million economic impact on Beloit, the site maintains Kettle’s commitment to sustainable principles.

Landscaped on 11 acres of rolling prairie, the stylish and modern structures were designed to be functional and pleasing to the workforce, as well as Mother Nature. More than 35% of the building materials were harvested or extracted from within a radius of 500 miles, and 78% of the construction waste materials were recycled or salvaged. Energy efficient windows allow 90% of the workers to see the great outdoors from their workstations.

“Kettle has a strong commitment to the comfort of its employees,” said ACS President Jim Corkery. “During construction we had to cut the packaging area windows bigger to get that full 90%. You can see from the beautiful break room, for a manufacturing facility, they invest in their people.”



KETTLE FOODS PLANT

All of the cooking oil is re-used before being converted to bio-diesel. By filtering and reusing potato wash water, millions of gallons of water will be saved, and 120,000 gallons more will be conserved by diverting excess filtered water to facility restrooms.

Lastly, the factory has 18 wind turbines on its roof that generate 28,000 kilowatt-hours of electricity annually, enough to produce more than 50,000 bags of potato chips. **CRW**

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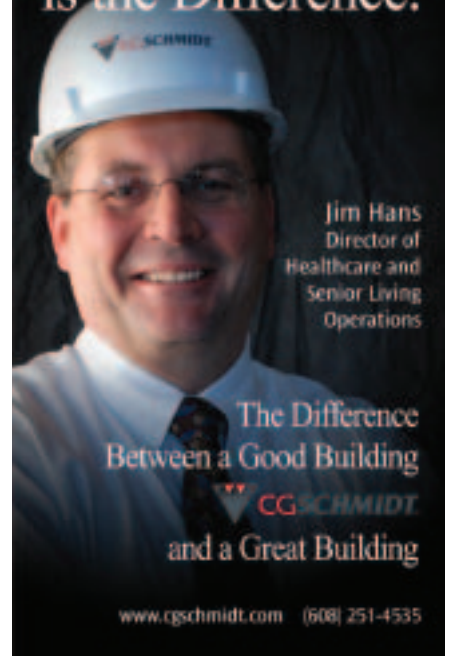
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Holistic Design

Building around the human element improves the work result and environment for those occupying new buildings.

By Jamie Welch

Frank Lloyd Wright used the term Organic Architecture in his work, while the ancient Chinese design practice Feng Shui utilizes the laws of heaven and earth to achieve harmony. However it may be described today, architects and engineers have found that designing with the human in mind can have ever-lasting health benefits for a dwelling's inhabitants.

In the health-care-facility industry, one new method used by architects, interior designers, facility managers and others is called Evidence-Based Design. A step-by-step process, it is used in the planning, design and construction stages of a building project. True to its name, results are carefully monitored, with the ultimate goal of demonstrated improvements to an organization's outcomes, economic performance, productivity, cus-

tomor satisfaction, and cultural measures.

From the pens of OWP&P Architects of Chicago, the newest Evidence-Based Design project in Wisconsin is the Cancer Pavilion at the Froedtert Hospital in Wauwatosa, which broke ground in 2005 and will open its doors this spring. The stunning 173,000-sq.-ft. building was designed and built around a philosophy of cancer care that thoughtfully integrates all facets of a patient's rehabilitation — from the first phone call to the last follow-up appointment.

John Balzer, VP of facility planning at Froedtert, learned 15 years ago about The Center for Health Design, which came up with the process. An advocacy organization of forward-thinking healthcare and design professionals, its goal is transforming healthcare settings — including hospitals, clinics, physician offices,

and nursing homes — into true healing environments, while at the same time justifying the billions spent on health care real estate.

SEEKING BEST PRACTICES

Froedtert joined the Center as a founding partner in The Pebble Project, a research program initiated with San Diego Children's Hospital & Health Center in 2000. The Froedtert Cancer Pavilion began with extensive research at health care facilities throughout the country. After eliciting extensive ideas from cancer patients, physicians and administrators, Balzer realized a key component to the layout of the new cancer clinic should be to centralize the care around the patient first, then to improve the environment for visitors and caregivers.

"We wanted to create a one-stop, patient-hub facility," says Balzer. "In the past, cancer

The Cancer Pavilion at the Froedtert Hospital in Wauwatosa, scheduled to open its doors this spring, is a 173,000-sq.-ft. building designed and built around a philosophy of cancer care that thoughtfully integrates all facets of a patient's rehabilitation — from the first phone call to the last follow-up appointment.

patients had to find their way from one practitioner to the next, but with this facility doctors and specialized physicians find their way to the cancer patient. Going a step further, we studied the data from our patient research and we discovered that interests varied from one person to the next. Of course some things are universal — all rooms have great views and are pleasing and accessible environments, but patients can also choose to be in a more social environment or one where they have some privacy. Additionally, one primary caregiver stays with

the patient through all stages of care in order to create a more personalized approach. Visitors also benefit by having a central parking area and comfortable places to be near their loved ones.”

Going forward, as a part of Evidence-Based Design, Froedtert will administer three research projects to extract the results of the Pavilion, which comprises a cancer clinic, day hospital and quality of life center, which focuses on physical therapy and holistic healing. The much-anticipated data from the cancer pavilion’s patient care could answer a

lot of questions about the effectiveness of Evidence-Based Design.

Another leader in Wisconsin health care design is Zimmerman Architectural Studios of Wauwatosa. The 102-year-old firm recently received five awards from the American Society of Interior Designers (ASID) for its work.

Recently, the firm celebrated the retirement of Bob Lewcock, the director of Zimmerman’s interior design studio for 41 years and a pioneer in the holistic integration of interior design and architecture.

“It’s significant that three of the five ASID awards involved healthcare facilities, and that another was for our work in educational institutions,” says Lisa Jansen, who succeeded Lewcock. “One of Bob’s major contributions to Zimmerman and to the industry as a whole was the recognition that the building architecture and interior could be made to work together synergistically to achieve an optimum environment for the facility. Bob also did extensive research into the client’s needs in order to select the right materials and specify the correct details to promote well-being and efficiency and to prevent inadvertent problems.”

KEEPING THE USER IN MIND

Jansen recalls how Lewcock tackled the interior of an elderly care facility, where he pointed out the importance of floor surfaces being free of stripes or other patterns that could result in confusion to the vision impaired, or the avoidance of sharp edges on interior walls where they could cause injury.

ASID gave Zimmerman a Gold award for its recent interior design of Columbus Hospital, Columbus, Wisconsin. “The challenge with Columbus Hospital was to make the rooms more inviting for families and to promote greater interaction with the patient,” Jansen says. “We specified larger rooms with plentiful lighting and devised a unique wall unit that provides shelving for flowers or mementos to allow for personalization of the area, as well as a computer station for visiting family or friends.”

But designing around human needs doesn’t stop with the healthcare industry. While Johnson Controls makes automotive interiors that help make driving more comfortable, its buildings management operations optimize energy and improve comfort and security. Johnson Controls recently launched a research project called Oxygenz, a global survey of 18-25 year-olds to understand their preferences for their future workplace.



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“For the first time ever, four generations are working together side by side [in America’s workplaces],” says Guy Holden, vice president at Johnson Controls. “As the baby boomers of the 1950s start to retire, businesses are facing a fundamental shortfall in talent. Providing a stimulating working environment is going to be a key factor in the war for our future talent.”

According to Holden, the Oxygenz survey is one of the biggest research projects the company has tackled. There is a Web site (oxygenz.com) where students and young workers can participate in an interactive online survey, building a profile of their ideal workplace, which they can share with other survey respondents around the world.

“The findings will tell us the emphasis that Generation Y puts on the workplace and the role it plays in their employment choices,” says Dr. Marie Puybaraud, creator of the survey and a Johnson director. “By undertaking this survey globally, we will gain a unique insight into the preferences of Generation Y.”

SITE DESIGN PLAYS A PART

One thing that everyone in the workplace and their patrons will appreciate is the result of

a good site planning effort. Obviously rolling hills along the Wisconsin River are an ideal palette, but what happens when the site is in a blighted inner-urban industrial area? Or the site design ordinances are outdated yet mandated by a municipality?

Tom Mortensen is a Registered Landscape Architect and Site Planner with R.A. Smith National, one of Wisconsin’s largest civil engineering firms with a strong multi-disciplinary sustainable site design team. Mortensen said that before a project begins it’s imperative to get everyone together to discuss the goals of that project. He works closely with Project Manager Mike Pasche, LEED AP, and a civil engineer at R.A. Smith National, to collaborate with the design team early on in the process.

“It’s a collaboration that Mike and I like to call ‘sharing the crayons,’ with other design professionals,” said Mortensen. “Good site design is about taking advantage of the physical and perceptual characteristics of a site, from spatial constraints and function, to capitalizing on good view sheds, to challenging the norm. It’s a dynamic process and the variables can be numerous. But a good outcome of this effort can make for a very special place

and a great project.”

Although Evidence-Based Design isn’t a term used by all architects, its manifesto reads eerily similar to what Mortensen describes. The definition given on the Center for Health Design’s Web site states that “critical thinking is required to develop an appropriate solution to the design problem; the pool of information will rarely offer a precise fit with a client’s unique situation.”

Jim Mladucky, a principal at OWP&P Architects, had the luxury of creating Froedtert’s new Cancer Pavilion facility. The wonderful vistas from the floor-to-ceiling windows include ponds, watersheds, and parks. The whole ambience is attractive and soothing.

Mladucky noted that the final goal of Froedtert Cancer Pavilion is more than just saving money for the hospital, keeping the patient comfortable, making things easier for the caregivers, or making visitors feel welcome.

“Ultimately, what the hospital is trying to do is cure cancer,” Mladucky said. That’s a result from an architectural design philosophy that the world would immediately benefit from — no matter what the nomenclature, the experts say. **CRW**

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