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GOLD STANDARD

Cade Winery aims to be California's first LEED Gold certified, solar-powered winery.

By Beth Galleto

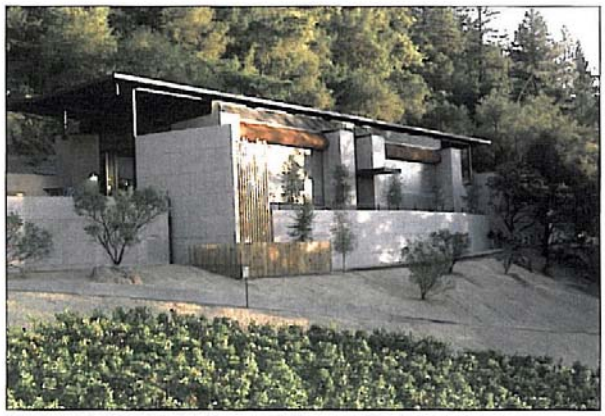
Rendering of Cade Winery's hospitality building, scheduled for completion in March 2009

The approach to Cade Winery is a winding road that climbs Howell Mountain, past trees and vineyards, then ends in a small parking area. The adjacent hospitality building, a new construction scheduled to open in March 2009, is deliberately situated so its concrete walls block the view. But as you walk alongside them toward the center's entrance, you step into an open courtyard where a breathtaking panorama is suddenly revealed: vine-covered slopes, Manzanita trees and a vista extending across the valley floor to the distant Mayacamas Mountains.

This progression, part of the design strategy fashioned by architect Juan Carlos Fernandez of Lail Design Group in St. Helena, is just the first example of how this Napa winery has been designed to respect and honor its environment in every way. Cade is part of the PlumpJack Group, which also owns the more established PlumpJack Winery in Oakville. Owners John Conover, venture capitalist Gordon Getty and San Francisco Mayor Gavin Newsom aspire to make Cade the first California winery that's Gold certified according to LEED (Leadership in Energy and Environmental Design) ratings. The LEED Green Building Rating System is the nationally accepted standard for design, construction and operation of high-performance green buildings. The process of earning LEED certification has involved innovations the PlumpJack Group could never have imagined at the project's beginning.

"One of our goals was to respect the site," says Conover, Cade partner and general manager of PlumpJack Winery. To this end, Cade is in the first of three required years of organic farming methods and hopes to be a certified organic vineyard by 2011.

"The PlumpJack Group was presented with a once-in-a-lifetime opportunity to purchase a world-class vineyard in this remarkable growing region," says Conover. "We're extremely excited to produce world-class estate wines that fully express the extraordinary terroir of the Cade acreage—and to do so using strictly organic, sustainable farming practices. Our commitment to sustainable farming is enhanced by the green construction of the buildings we've created for the estate."



Cade Winery is designed to incorporate the property's trees

Conover says the partnership is investing more than $12 million into this winery and estimates the green construction elements added about 3 percent to those costs. Is it worth it? "Absolutely," he says. "This is very important to us."

Green decisions started early in the planning for Cade (the name was taken from a Shakespearean term meaning an oak cask or barrel). Of the property's 60 acres, 19 are planted to Cabernet Sauvignon and two to Merlot. A yet undecided portion of the remainder will be protected in a land trust to ensure it will always remain open space.

Nontraditional design

The PlumpJack Group selected Fernandez as architect because of his history of bold, innovative designs.

"Wines from the slopes of Howell Mountain are masculine and strong. We wanted an architect who could create a design in the same style," says Conover. He notes that many of Napa's wineries are fashioned of stone and wood, in the traditional styles of Europe. "We wanted to do something different, with concrete, glass, and strong elements. Juan Carlos' skill fits in well with what we wanted for the site."

In 15 years of experience, Fernandez, a native of Mexico, has developed a design style that reflects his background and world travel. He accepted this project—and all its challenges—with enthusiasm, working with Cade winemaker Tony Biagi to create a striking design that's functional, but also lives up to the commitment to make the winery as green as possible.

LEED Certification is based on a point system developed by the U.S. Green Building Council. Points are awarded for such things as being less intrusive on the environment, efficient water use, energy conservation, and reuse and recycling of materials. Cade earns points in all of these, both through its design and its methods of operation.

In harmony with nature

In addition to taking full advantage of Howell Mountain's dramatic view, Fernandez designed the winery building in an orientation that preserves the many trees on the building site.

"We took only three trees," Fernandez says. "That was one of the challenges." Tall trees are visible behind the main winery building, and Fernandez has designed vertical elements in the building that echo the lines of these trees.

Constructing the building on a 38 degree slope was another challenge. A wall made of shotcrete, a type of concrete that's shot into place, holds back the hillside adjacent to the building. Shotcrete is projected at high velocity onto a surface, and the wall is stabilized by soil anchors driven horizontally into the hillside. This technique doesn't require forms and footings, which minimizes excavation and leaves the surface above the wall undisturbed. "We never had to touch the earth to build the wall," Fernandez explains. "Everything behind it is intact. If we built a regular retaining wall, we would have lost another 50 trees."

A rendering of Cade's administration building.

Cade has an unusual, inverted roof with its lowest point in the middle. When it rains, the angled roof collects water that's later used in the vineyards.

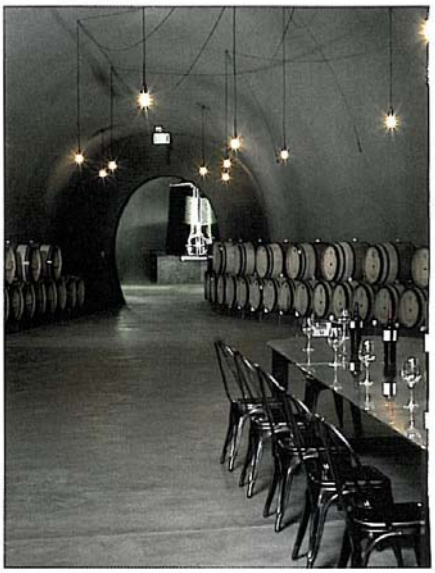
Conover points out that water can also be saved in other stages of winemaking. For example, during the racking process (separating the fermenting wine from sediments called the lees) Cade saves water by using automated barrel washers. "We use one-third as much water by automated washing of the barrels than if someone washed them out with a hose," he says.

A net zero building

All involved in the winery are proud Cade is completely solar powered. Invisible from the ground, solar panels cover 40 percent of the angled roof. Conover marvels that, with a footprint of more than 15,000 square feet, the buildings and caves have no net energy use. "It's a net zero building," he boasts. "We're not allowed to sell power. The best we can do is have a zero power bill."

He notes that between Cade and PlumpJack wineries, the group has two extremes. The PlumpJack winery building was constructed in the 1880s with traditional building styles of the time. The comparison is instructive: With its innovative, efficient design, Cade crushes more wine than PlumpJack but uses 50 percent less energy during the power-intensive harvest season.

Temperature control is a big part of a winery's energy use. According to Conover, the climate on Howell Mountain varies



This table was made by a Napa artisan with steel recycled

from a Mare Island furnace.

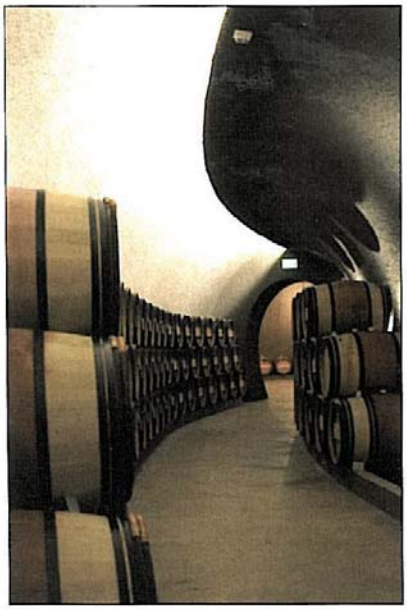
from snow in winter to 110 degree heat in summer.

The fermentation room in the main winery building, open at both ends, is cooled naturally by cross ventilation. Horizontal louvers built around the top of the building are a design element and also allow additional ventilation. Thick concrete walls retain nighttime temperatures and keep the building cool on hot summer days. And, Fernandez says, although you can't see it, the roof is white and reflects the summer heat.

Each of the 16 large steel tanks in the open room—each containing the fermenting juice of one of the vineyard's 16 different vine clones—has its own localized temperature control.

The fermentation room leads to a 14,500-square-foot network of caves, built into the hillside in the shape of an inverted version of the PlumpJack logo shield. Inside the caves, which range in depth from 40 to 100 feet below the surface of the hillside, the temperature is 61 degrees year round. The caves are designed to hold 1,200 wooden barrels, stacked two high.

There are no straight lines in the caves—even the floor is crowned with a slight curve, designed so any moisture from rinsing the barrels drains away behind them, reducing the risk of workers tripping on floor drains. Ventilation is particularly important in the caves, because carbon dioxide is a byproduct of the fermentation process. "Ventilating the CO_2 is difficult, but it's critical," Conover says. "We have a pipe bringing fresh air in. The CO_2 is heavier than air, and vents are built near the floor to let it out." CO_2 meters are spaced throughout the caves, which have a natural humidity level of 80 percent.



The wine caves encompass 14,500 square feet.

In winter, heating is limited to a small area—only the offices and bathrooms are heated. When it's cold, workers in the winery building wear coats.

Reduced, reused and recycled

The fermentation room is illuminated by diffused light from hundreds of square feet of south-facing windows, made of translucent glass sectioned by vertical

ridges. "We imported this glass from Belgium," says Fernandez. "It lets us use a big percentage of glass without dividers. Regular glass couldn't be that tall, it would break."

He notes most of the materials used in the caves' and building's construction come from a distance of less than 500 miles. The concrete, for example, comes from a source eight miles from the winery, even though it would have cost less to get it from more distant sources. The imported glass is a compromise, he says, because of its special qualities.

Fernandez designed the Cade project to use concrete with 30 percent fly ash, steel made up of 98 percent recycled material and wood certified by the Forest Stewardship Council (FSC). He explains that fly ash, a byproduct of coal, reduces the amount of cement used. But the mix has to be just right. "It was a learning curve for all of us," says Conover. "We had to source out the suppliers and we had to give the recipe to the concrete manufacturer."

Fernandez also used innovative types of insulation materials in the building, including one made from recycled blue jeans. The roof was sealed and insulated with a spray foam made from a soy-based material, selected because of the low levels of fumes it emits compared with other insulation materials. Fernandez notes that paints, sealers and other such materials emit volatile organic compounds (VOCs), but that LEED certification requires a low level of such emissions. The floor in the offices is made of recycled cork. Rusted metal is used as a design element in the building and grounds.

Some recycling methods the group used are pretty basic. "During the construction, we had guys with magnets pick up nails. We ended up with barrels of nails that we recycled. If we didn't do that, they'd just be buried," says Fernandez. "Just think, if everyone would pick up nails on a building site, how much recycling you could get!"

Sustainable farming

"Both PlumpJack and Cade are farmed using sustainable methods," says Conover. The only difference is weed control. "At Cade, it's all done by hand; at Oakville, on the valley floor, we use an herbicide." The goal is for Cade to become an organically certified farm, a process that requires farming by organic methods—not using chemical fertilizers or pesticides—for a minimum of three years.

Conover says that no fertilizers of any kind are used at Cade. "The rocky soil and lack of topsoil on Howell Mountain force the vines to struggle to survive. The theory is that the more the vines suffer, the more intensely flavored the grapes will be."

The winery is open for tours and tastings by appointment every day. Tastings will take place in the hospitality building when it's completed, treating tasters to the spectacular view through picture windows. The tasting room is designed to evoke the comfort and intimacy of a home, with a fireplace (burning clean ethanol) and a commercial grade kitchen so that wines can be tasted with food. The winery can be can be used for 15 events per year, specifically geared toward the marketing of wines.

Conover feels that restricting wineries to activities related to the business of wine is entirely appropriate and necessary. "I think this is the right course to take. What makes Napa Valley so special is its agriculture, and such a jewel can be easily lost. Farming is the foundation of the valley. We need to keep it that way."

The Wines

Cade makes four wines, three red and one white, which you can purchase directly from the winery.

Cade Howell Mountain Estate Cabernet Sauvignon
This wine will be made from grapes grown on the Cade estate. The second estate harvest was completed in fall 2008. Wine from the first harvest, the 2007 Cade Estate Cabernet Sauvignon, is still in the barrel and will probably be released in fall 2009.

Cade Howell Mountain Cabernet Sauvignon
Made from grapes purchased from small artisanal growers in the Howell Mountain appellation, the 2005 Cade Howell Mountain Cabernet Sauvignon was released in July 2008. (The Howell Mountain appellation is an officially designated AVA within the greater Napa Valley AVA.)

According to Cade's winemaker Anthony Biagi, the Cabernet Sauvignon is "rich and intensely structured with a striking tannin profile that truly exemplifies the Howell Mountain appellation. Enticing aromas of chocolate, blackberry, soy and black olive intermingle perfectly with the creamy layers of blackberry, rose petal, black cherry and fig cake, providing this wine with rich upfront fruit and a long lingering finish."

Cade Napa Cuvee Cabernet Sauvignon Napa Valley
Cade released both a 2005 and a 2006 Napa Cuvee Cabernet Sauvignon, the latter in fall 2008. The 2006 is a blend of 76 percent Cabernet Sauvignon, 23 percent Merlot and 1 percent Petit Verdot, made entirely from grapes grown in some of Napa's most renowned vineyards located on the steep hillsides of the Mayacama and Vaca mountain ranges.

According to Conover, "The 2006 vintage allowed us to make a wine that's extremely approachable, with crisp acidity and complex fruit, and the result is Napa Cuvee Cabernet that's great for sipping on its own or pairing with a wide variety of dishes and cuisines."

Biagi describes the 2006 release as having "immediate aromas of blackberry, currant, anise and vanilla followed by rich aromas of plum, cedar and soy. For the palate, the wine offers bold flavors of blackberry, boysenberry, black olive and raspberry and is finished with a smooth, lush hint of polished tannin."

Cade Napa Valley Sauvignon Blanc
The winery has both a 2005 and a 2007 Sauvignon Blanc. For this wine, grapes are simultaneously fermented in four types of vessels—concrete eggs, steel tanks, steel drums and oak barrels—creating a distinct and interesting flavor profile in the final combination. Conover says that the concrete eggs, which are egg-shaped vessels similar in size to the barrels, impart a creaminess that's rare in Sauvignon Blanc. "We're one of the pioneering wineries using these small concrete eggs," says Conover. The 2007 vintage was selected as Editor's Choice in the April 2008 issue of *Wine Enthusiast.*