

Terravant Pioneers Winery Pollution Controls System First of Its Kind

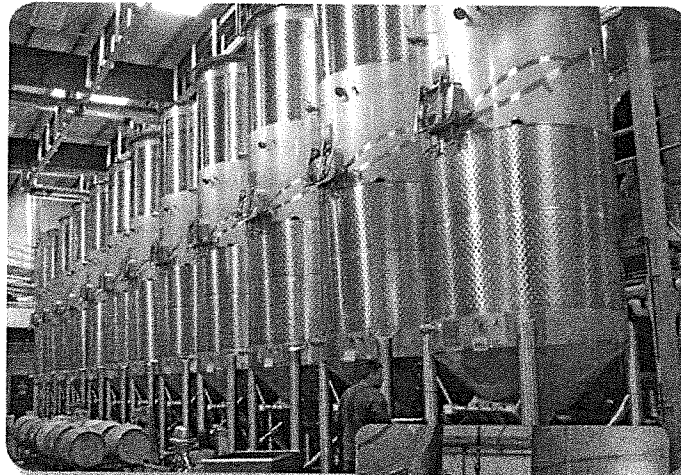
Terravant Wine Center in Buellton has pioneered a state-of-the-art pollution-control system that captures more than 90 percent of the emissions of ethanol in the facility. Ethanol is a volatile organic compound, a smog-forming pollutant.

Said Mike Goldman, District Engineering and Compliance Division Manager, "As far as I know this control system is the first of its kind in the world; it represents the first time this emission-control technology has ever been effectively used in a winery."

Terravant provides "grape to bottle" services to wineries. The 40,000 square foot facility makes wine for some thirty wineries under an "Alternating Proprietor" arrangement. They also provide "Custom Crush" contract services for fifteen additional wineries and private label services to retailers and restaurateurs.

This is the way Terravant General Manager Randy Pace likes it: "We get to focus on just making the wine—we don't have to worry about inventory or sales." Before joining Terravant, Pace was Chief Operating Officer at Stag's Leap Wine Cellars in Napa for twenty years, and then General Manager at Bridlewood Winery in Santa Ynez for three years. He has also been making small lots of wines under his own label since 2006.

Pace expects Terravant will process 3000 tons of grapes in 2011, up from 2200 tons in 2010, 1800 tons in 2009, and 820 tons



Tanks at the facility hold up to twenty tons of wine (for the red wines).

in 2008, its first year of operation. Total cost for the facility and all the equipment was \$22 million; the emission-control system cost \$600,000. "We are breaking even now, and expect to make a profit next year. This is considered quite good for a winery operation," he said. He expects production to continue to increase, and eventually to reach the Center's 4500-ton capacity.

Pace had originally envisioned a somewhat smaller facility with a lower-tonnage capacity. When he realized he would need to make adjustments to accommodate pollution controls, he decided to redesign the facility and increase the capacity so the system would accommodate expansion.

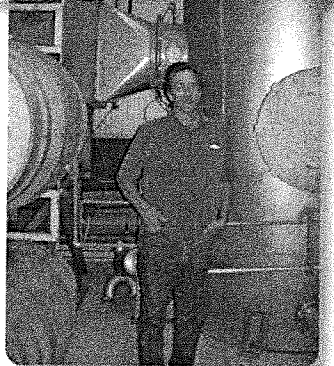
As he considered how to reduce emissions to meet District regulations, he realized he was in uncharted territory. He remarked, "We didn't have a real-world example to go by.

He explained how the process works. A powerful fan continuously sucks air inside the facility into ducts, removing all the indoor air in only 45 minutes. As air is removed, more air comes in from the outside; the building is constantly under negative pressure so that indoor air does not escape to the outside.

The air is blown through the ducts into the scrubber, where water rains down and liquefies the ethanol vapors. The liquid (now approximately .004% ethanol) is then pumped through a Venturi chamber, where hydrogen peroxide is added, and an ultraviolet light provides the energy for the hydrogen peroxide to break down the ethanol—leaving only water and carbon dioxide. The ultraviolet light used is so powerful that if it were used to purify water, it could purify one million gallons of water in a day. Recent testing indicates the system is effective in removing more than 90 percent of the ethanol emissions.

"This works because we designed everything from the ground up," noted Pace. His innovations were not limited to the emission-control system. As he made design decisions for emission control he also designed for energy and space efficiency. Once he decided to raise the ceiling of the facility by six feet to accommodate the duct system, he took advantage of the opportunity to use taller tanks. For red wines, Terravant

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Randy Pace in front of the scrubber.

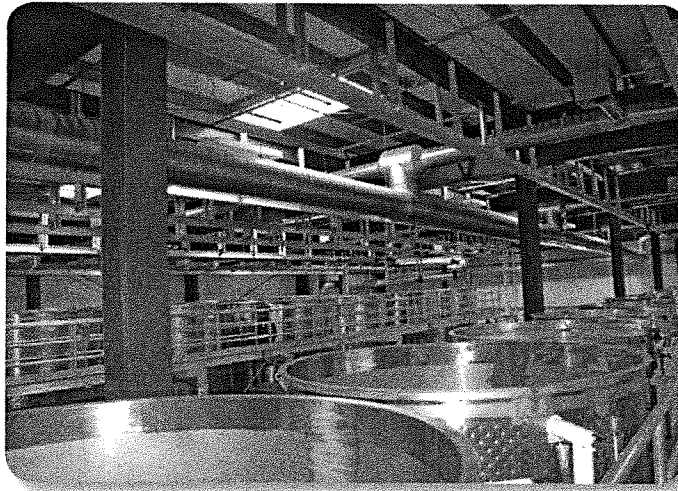
We looked at ethanol plants, but they are so different—they have a significantly higher concentration of ethanol in emissions." Working with the District, and with an environmental consultant, he evaluated several different technologies, including control methods involving catalytic oxidation, condensation, and carbon adsorption. He finally settled on a scrubber system, and noted, "We're using equipment commonly used to control emissions from coal plants—but in a completely different application with completely different chemistry."

Business Focus

Winery Pollution Controls (cont'd)

uses double tanks stacked one on top of the other, each with a twenty-ton capacity. Tank operation is fully automated, and tanks are self-emptying, saving energy and improving worker safety. The building is well insulated, and lighting is controlled by sensors. Small, strategically placed skylights provide so much natural light (especially with reflection off the stainless steel tanks and equipment) that there is seldom a need for additional lighting during the day. Said Pace, "The skylights represent only about two percent of the surface area of the roof, but it's amazing how well they work."

The Center also includes advanced equipment that uses less energy, saves costs and time, and improves the quality of the wine. Cold stabilization, a process required for white wines, typically involves refrigeration of the wine over an extended period until the potassium tartrate precipitates out



The combination of small skylights and reflection off the stainless steel equipment reduces the need for additional lighting. Also visible in the photo is the duct system.

of the wine and can be removed. Instead, at Terravant, the wine is passed through a column with material that attracts the potassium ion, and removes it. "Instead of needing to cool the wine for two to three weeks, you can cold-stabilize an entire tank of wine in one day. There are gigantic energy savings, and the wine is better too," said Pace.

He also uses cutting-edge equipment to de-alcoholize wine, replacing a process that risks affecting the wine's taste by heating and exposing the wine to air. Instead, he uses a membrane filter process that requires much less energy, is much more gentle to the wine, and allows for more precision in fine-tuning the alcohol content.

In 2009 Terravant opened Avant, a tapas and wine bar, where visitors can pour tastes, half glasses or glasses of wine themselves using a special dispenser. They can choose tastes from 32 different vacuum-sealed bottles of wines made at Terravant, including wines from highly respected wineries such as Alma Rosa, Ken Brown Wines and others.

Overall, Pace has enjoyed the opportunity to combine his passion for wine making with the use of innovative technologies and systems. He remarked, "What it really comes down to is making a quality product. That's what we're about."

For more information on permitting and wineries, see: www.OurAir.org/eng/winery/winery.htm. For more information on Terravant Wine Center, see: <http://www.terravant.com>.

Asbestos

The District enforces the federal laws controlling work practices for the demolition and renovation of institutional, commercial, or industrial structures in which asbestos may be present. (Single-family private residences and apartment buildings with no more than four dwelling units are excluded.) Depending upon the amount and type of asbestos and the type of project, advance notification to the District may be required before asbestos is disturbed and/or removed. Notification is always

required for demolition projects, and requirements may also include notifying local residents and occupants of buildings where asbestos abatement is being done.

Asbestos is a term used to describe several types of naturally-occurring fibrous minerals found in many parts of California. Asbestos fibers are lightweight, fire-resistant and not easily destroyed by natural processes. Because of these characteristics, asbestos was regularly used in construction

and thermal insulation in the past, and is even used in some building materials today. When broken or crushed, asbestos can become airborne and may stay in the air for long periods of time. If inhaled, asbestos fibers can permanently lodge in body tissues and pose a serious health threat.

Exposure to asbestos has been shown to cause cancer and asbestosis, a chronic disease of the lungs with symptoms similar to emphysema. Since there is no known safe level of exposure,

all asbestos exposure should be avoided. This is particularly important when removing asbestos insulation.

It is also important to remember that fire will not destroy microscopic asbestos particles. If older homes or buildings are burned, particular care should be taken sifting through rubble and cleaning the site.

For more information, see www.OurAir.org/biz/asbestos.htm.