

Smart, Not Romantic: Barrel Rack Safety

By E.D. Rust

Barrel racks don't have the romantic cachet of barrels. Consumers who wax poetic about barrel-fermented, toasty oak flavors could probably care less about the benefits of powder coating or increased barrel density in the cellar.

But all of that, including the safety in the workplace that barrel racks help enhance, contributes to the cost of goods sold—and the winery's profit margin—on that bottle of Chardonnay.

When Dr. Richard Peterson designed and developed the first steel barrel rack back in the 1970s, his incentive was more altruistic than safety-related. "For me the barrel rack was simply a time and labor saving device," he said recently. "The safety features really only came out when we discovered how stable the racks could be made."

Historically, since barrel racks have only been in extensive use since the late 1970s, the biggest customers for racks have been medium to large-sized California wineries. A small French chateau, with few barrels, low cellar ceilings and a reliance on hand labor at every winemaking step, has little use for barrel racks. Making chock blocks and building barrel pyramids has been a tradition and an art for years... and it has worked in chateaux, whether in France or in California.

But as California wineries expanded during the '80s, the need for safe and easy barrel storage combined with the desire to utilize space efficiently made racks a hot item, and the 1989 Loma Prieta earthquake turned out to be a well-timed sales pitch. Now it makes sense for even small wineries to consider the safety features of racks.

Until steel racks came along, wineries used traditional pyramids and elaborate wooden shelving systems, mainly made of 4" x 4" lumber, for barrel storage. They were tough to clean and required extensive hand labor. Worst of all, OSHA rules

made them prohibitively expensive to build and wasteful of winery space.

"When I got to Beaulieu," recalls Richard Peterson, "we had 4" x 4" racks with a tire at the end of each narrow aisle. Cellar workers rolled the barrels down the racks and off the end, where they fell onto a tire to stop the barrel and absorb the shock," which was not necessarily a CAL-OSHA approved maneuver, he said.

Peterson figured he could modify pallets to store barrels to easily move the barrels with a forklift. He visited Schenley to assess their system, and found barrels stored on their heads, fine for aging bourbon or brandy, but impractical for wine. The pallet idea stuck with him when he left Beaulieu to start the Monterey Vineyard. "I finally had the chance to design a system from scratch, rather than retrofitting," he recalls. "We ended up with two-barrel pallets that could be handled in stacks of two. That was more stable than the original idea of using a four-barrel

pallet," he said. "The four-barrel pallets were fairly stable and helped save space, but they were clumsy and extremely heavy; they required too large a forklift."

The welded steel rack idea came when he noticed a similar device used for holding Coca-Cola drums. He designed a similar rack for wine barrels, then gave away his idea to the wine industry.

"I know I could've made a fortune, but it was enough just to get my name on the Barrel Rack design. It was very important for me to give something back to the industry." So at the Wine Industry Technical Symposium (WITS) in 1975 Peterson presented his rack design in a paper to attendees. Few prototypes had been made at that point, but numerous manufacturers jumped at the opportunity.

One of those vendors was Western Square Industries, a versatile company on the lookout for new manufacturing opportunities. Western Square already manufactured steel racks for bottled water, farm equipment, picking bins and



A Western Square welder destroys an old barrel rack under their rack return program.

New Millennium Material: Stainless

So what's the ultimate solution to rack degradation and replacement? Maybe it's stainless steel. Just like stainless revolutionized white wine production in the '60s, it may do the same for barrel storage in the new century.

Rust degrades steel barrel racks. Minimizing rust prolongs rack life. Stainless steel racks have the potential to last indefinitely, and certainly have double the life span of steel racks. And that's important, since stainless steel racks cost twice as much as powder-coated steel racks. "But when you

factor in the life-span of stainless steel," says Western Square's Trygve Mikkelsen, "the cost becomes realistic."

Besides, where aesthetics are a consideration, stainless steel racks just look great. And at locations that have a salt air influence (like Pacific Star Winery), stainless is much more impervious to corrosion than tempered steel.

Stainless steel barrel racks are currently a small part of overall rack sales, but that could change as customers begin thinking more long term.

trailers. "We always felt that we were in the business of reducing labor costs, as well as just manufacturing," says company vice-president Trygve Mikkelsen. With bottled water racks, for example, that meant designing a system so that a five-gallon jug was untouched by human hands until the driver physically delivered it to the water cooler.

That philosophy fit nicely into barrel racks, says Mikkelsen, because Western Square could build racks and washing systems so that cellar workers would no longer have to physically pick up barrels. Fork lifts did all the work, from stacking to washing, saving time and lower back pain.

But even labor saving devices have a life span. "Steel gets weak," says Mikkelsen, "especially when it gets bumped and tossed around by a forklift. It also rusts after awhile. In areas with a salt air influence like Carneros, rust rates can increase dramatically. Western Square and other rack suppliers began retrieving racks from customers and refurbishing them, sandblasting off the rust and repainting the racks.

"They looked like new," says Mikkelsen, "and we thought the powder coating would increase the life span," but customers were still returning racks because of damage. Indeed, the reconditioned racks experienced damage rates at far higher levels than new racks, so in the interest of research, a Western Square manager destroyed one of the reconditioned racks to assess weak

spots. The hack-saw test altered the course of Western Square's business.

Visual inspection showed the tubular steel was almost worn through in some places. For Mikkelsen, it was clear that the sandblasting and repainting had simply hidden potential problems. Western Square halted their rack refurbishing program and began to think in terms of a regular inspection and replacement program instead. "We now believe that most racks should be automatically replaced after six years unless they suffer specific structural damage before that time," says Mikkelsen. "Although we believe that six years is the right time to replace barrel racks, it is most important that each winery develop a specific replacement plan suitable for their conditions. We expect that concern for employees and the product dictates an automatic replacement plan. Waiting for racks to fail is not an appropriate plan. Winemakers and cellar masters need to pick an appropriate time frame for their facility, and implement that plan for their company."

"It's very difficult to inspect a barrel rack," says Dan Kopache, barrel manager at one of Kendall-Jackson's facilities. "We buy over 10,000 racks per year to replace old racks and to cover expansion needs. You can't look at every weld or under each support to make sure there's no rust."

Kopache racks 60,000 red barrels every three months, quite a bit more than Sally Ottoson at tiny Pacific Star Winery north

of Fort Bragg. Ottoson says hers is the "western most winery in the continental U.S." Her home and the winery sit just 20 yards from the Pacific Ocean cliffs.

Pacific Star's rust problems stem from the salt content in the sea air. Ottoson appealed to Western Square for solutions and they suggested two layers of powder coating, rather than the normal one. It worked, to a point. According to Western Square's Mikkelsen, "the extra cost (about \$25 per rack) made it too much of an up charge for most larger buyers to afford."

Still, rack manufacturers are consistently looking for ways to improve quality and ease of use. Western Square's powder coating increases rack life. Rack dating keeps track of age and determines when racks should be discarded and destroyed. Western Square developed a rack return program with Fetzer Vineyards that picks up and destroys old racks to prevent their ending up refurbished and back in the barrel room after their life span.

Inspecting Steel Barrel Racks

Aside from dating, tracking and rotating racks on a regular schedule, the best accident prevention policy is regular rack inspection.

Kendall-Jackson's Dan Kopache inspects barrel racks every time they're moved. "It's especially easy during racking," he says, "when you don't necessarily have to use a flashlight." His crew also spot-checks older racks whenever new ones arrive.

Specifically, the crew looks for any damage caused by forklifts or by dragging, and they look for any cracks. They also check for bent legs and cradles that may have become detached, and they look for nicks and dings that may compromise the integrity of the steel. Finally, they examine the welds and check for rust.

Central Coast Vineyard Team Wins on Points

The Central Coast Vineyard Team (CCVT) represents a broad-based community partnership of winegrape growers, wineries, consultants, farm advisors, environmental interests and government representatives whose mission is to promote environmentally sustainable vineyard practices on the Central Coast.

They were recently honored by Renew America's National Awards Councils for Environmental Sustainability in Santa Barbara, San Luis Obispo and Monterey counties.

Team members are involved with more than 30,000 acres in the region and developed the Positive Points Systems (PPS), a method for evaluating the extent of sustainable farm practices used in vineyards.

Over the past three years, more than 50 growers have participated in the evaluations and more than 10,000 acres have been evaluated using the PPS.

For more information about CCVT call (805) 462-9431 or visit the Web site at www.vineyardteam.org.

"The program wasn't developed just because we're nice guys," says Mikkelsen. "We knew that no matter how new a rack looked, there could be an unseen problem with older racks." In a barrel room with thousands of racks, keeping track of rack age could also be a logistical nightmare, says Mikkelsen. Attaching a date tag to each rack that identifies manufacture date helped solve that problem.

Mikkelsen considers the cost of the return program as a basic insurance. "A two barrel rack cost less than \$60 per barrel. Assuming the six-year lifespan of a rack, that's \$5 per year per barrel... inexpensive insurance for a \$500 barrel and its contents," he says.

Craig Vipond, barrel manager at Fetzer, considers rack dating and the return program "definitely" a safety issue. "We stack barrels six high, five high for chateau barrels. I can't imagine what would happen if the bottom rack failed. We even have a safety manager who makes sure we don't climb around on barrel stacks anymore." Risk reduction means preventing catastrophic failure before it happens.

"Essentially, the return program costs us a bit more, but ends up being good business all around," says Mikkelsen. Western Square actually stopped refurbishing racks years ago. "It was clearly a decision based on safety of the winery personnel and our own best interests," says Mikkelsen.

Fetzer's Vipond installed around 4,000 new racks last year to accommodate

new barrels and replace old racks at two facilities. He inspects racks during every racking, when the barrels sit on barrel washers and are easily accessible. "The onus is on us to do a thorough rack inspection job, especially in our white barrel room, where we keep the humidity levels around 80%." Like Pacific Star's salt air, those high humidity levels hasten rust development.

Barrel racks are stable, space saving and, in the long run, cheaper than hiring a French cellar master to cut chock blocks. Fetzer's Bonterra winemaker, Bob Blue, who went through an earthquake as a winemaker at San Martin, has some opinions about chock blocks: "Forget it. I'm apprehensive about even walking into a cellar with barrels on blocks."

Blue saw the aftermath of the collapse of six-high barrels pyramids after the 1984 Morgan Hill earthquake, a magnitude 6.2 on the Richter scale. "Our stacks ran east to west," he recalls, "the earthquake wave came north to south, so all of our stacks fell north. I remember having to work our way through all these fallen stacks from the south, just pumping out and picking up cracked barrels along the way."

Research on earthquake proofing barrel racks is ongoing. For now, it makes sense for winemakers and cellar masters to take a proactive approach to safety, especially when there is a system in place to track age and replace damaged racks. It's one more way to protect a most valuable product. **W&V**