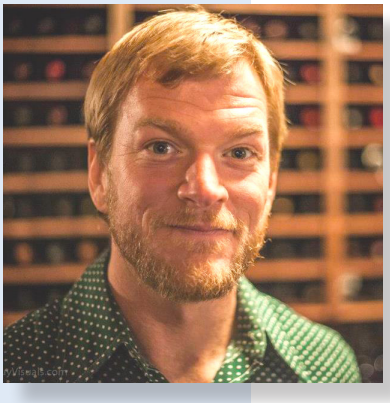
CLEAN AND EFFICIENT, MAZZEI INJECTORS BOOST WINE PUMP-OVER PERFORMANCE



Matt Brain
Winemaker & Lecturer
Fresno State University

As winemaker in the Department of Viticulture at California State University, Fresno, Matt Brain puts his students through the paces with the whole spectrum of wine aeration processes, from blasting the cap of grape solids with wine straight from a hose to running it through whirling irrigators, délestage, rack and return, and Venturi injectors.

"It's my job to expose students to as many techniques and technologies as possible," Brain says.

But if you ask him, he has a clear favorite.

"A Venturi injector is easy to clean and it's so simple, so easy to work with," Brain explains. "All these other techniques involve sanitizing and assembling lots of equipment. There is a lot of setup. You're lugging equipment to the top of the tank—it's dangerous to do that. And all those pieces are possible sources of contamination—with délestage, a bird or insect could easily contaminate the sump; with rack and return, you have to sanitize a whole tank every time.

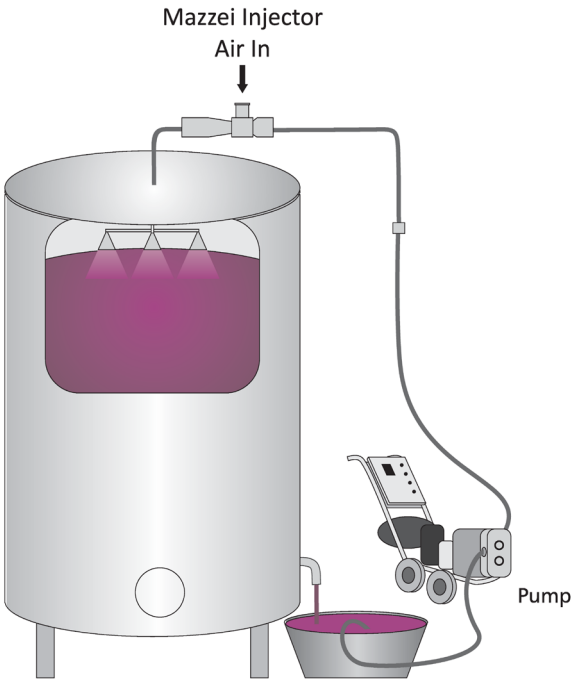
"It's so easy to slap an injector on the side of the pump and rock 'n roll," he says.

The flow of wine through the stainless steel Mazzei injector Brain uses at the Fresno State winery, creates a pressure differential. The result is a vacuum that draws air into the wine stream and mixes it thoroughly with the liquid. The injector has no moving parts—it is simply clamped in-line with the pump, and the laws of physics do the work.

Vital Step

Aerating wine through pump-over is a vital step in the fermentation process. Air drives carbon dioxide (CO_2) and volatile sulfur compounds out of the fermenting must, improving the flavor profile and keeping the environment favorable for yeast. Healthy yeast produces less off-flavor volatile sulfur compounds, focusing instead on using oxygen to create survival factors and healthy cell walls during the massive reproductive and respiratory demands of fermentation.

Oxygen—which makes up 21 percent of air—polymerizes tannins and anthocyanins to create rich color in red wine. It breaks up and reconfigures tannins—Brain calls it "shape-shifting"—to soften their flavors and create a richer mouthfeel while minimizing the chance that they will precipitate out of solution in the bottle.



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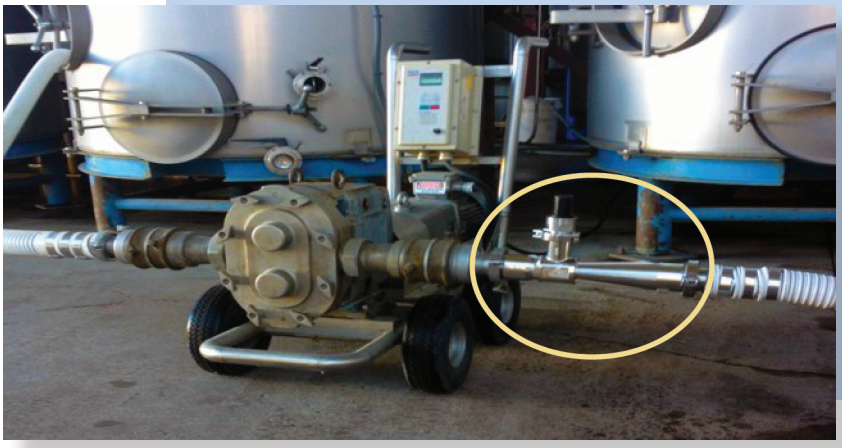
Research at other wineries has documented the impact of thorough aeration on reducing vegetative characteristics in wine, preventing stuck fermentation, and lowering levels of some sulfur compounds, which in turn reduces the amount of copper sulfate needed to control hydrogen sulfide.

In short, oxygen is necessary during fermentation—particularly for reds—to keep yeast healthy, develop the desired flavor and color profile, and yield wines that are typically more approachable earlier in their maturation.

Pump-Over Choices



Brain says his Mazzei injector is highly efficient at air transfer into the wine, and saves a tremendous amount of time every day when winemakers like him need it most.

"Anything you can do to optimize the process or eliminate the more laborious tasks is more than welcome," he notes.

"With the Mazzei injector, you could eliminate a number of rack and returns," Brain adds. "Rack and return is probably the most labor-intensive, chemical-intensive, water-dependent process in terms of aerating the wine. It involves sanitizing another tank, sanitizing the sump and screen and hoses. It takes a lot of time, a lot of chemical, a lot of work. To be able to eliminate a rack and return starts to really make a big difference."

Not All Created Equal

Brain notes that not all Venturi injectors are created equal.

"I've worked with some that shoot you right in the face with wine," he says. "I've worked with some that you have to run at a certain flow rate to get them to work. I've seen some where you need a long tube attachment just to see whether everything's flowing."

Angelo Mazzei, founder of Mazzei Injector Company in Bakersfield, California, explains that the complex physics occurring in the Venturi chamber demands meticulous design and precision manufacturing to optimize air intake and mixing into the wine stream. Specially engineered mixing vanes in Mazzei injectors ensure that air is sheared and blended into the wine for maximum effect.

In fact, in a trial pitting Mazzei injector against models from two other manufacturers, performance gaps were especially apparent when the pressure differential was below 50 percent. At those flows, the Mazzei injector exhibited 40 to 90 percent higher air induction capacity than the competitors' units.

Brain says the difference is clear in the winery.

"Mazzei's design is easy to work with," he says. "The sound of the air going in made me comfortable that I was getting the aeration I needed, and I never had any backflow problems. It was excellent."

For more information on Mazzei Venturi injectors in wine pump-over applications, visit mazzei.net/industrial-wineries/ or call 1.661.363.6500.

Using a Mazzei Injector for Wine Pump-Over

For best performance, a Mazzei wine pump-over injector should be located on the discharge side of the pump, which improves wine flow and minimizes cavitation in the pump. Maximum air injection takes place when the injector is placed near the top of the fermentation tank.

A 1.5" (3.8 cm) ball valve allows easy and accurate control of air flow into the injector. The valve also permits the introduction and metering of additives through the injector.