Irrigating Fruit Caps: A Clean and Green Solution

WILDEN® AODD PUMPS REWARD RODNEY STRONG VINEYARDS WITH IMPROVED ENERGY EFFICIENCY, LABOR SAVINGS AND GENTLE PRODUCT HANDLING



Founded in 1959, Rodney Strong has earned the reputation for critically acclaimed Single Vineyard and Reserve wines, stand out Estate releases and best-in-class Sonoma County varietal wines as evidenced by being named Wine Enthusiast's American Vineyards of the Year in 2013.

When Rodney Strong Vineyards built its new 10,500-square-foot fermentation facility in Healdsburg, CA, USA to accommodate premium grapes from their Cooley Ranch Vineyard, each detail was precisely planned. All equipment was carefully engineered or researched before purchase to assure the most efficient operations and optimum product handling possible. Among the critical components required were pumps for the important "pumping over" function of irrigating the fruit cap at the top of the fermentation tank.

To evaluate available pump technologies and manufacturers, Rodney Strong conducted exhaustive research and testing. As a result, they successfully identified and implemented the optimum pump and diaphragm technology that would yield a balance of energy efficiency, reduced maintenance, ease of use, cleanability, reliability and gentle handling of product for optimum fermentation.

Building a State-of-the-Art Cellar

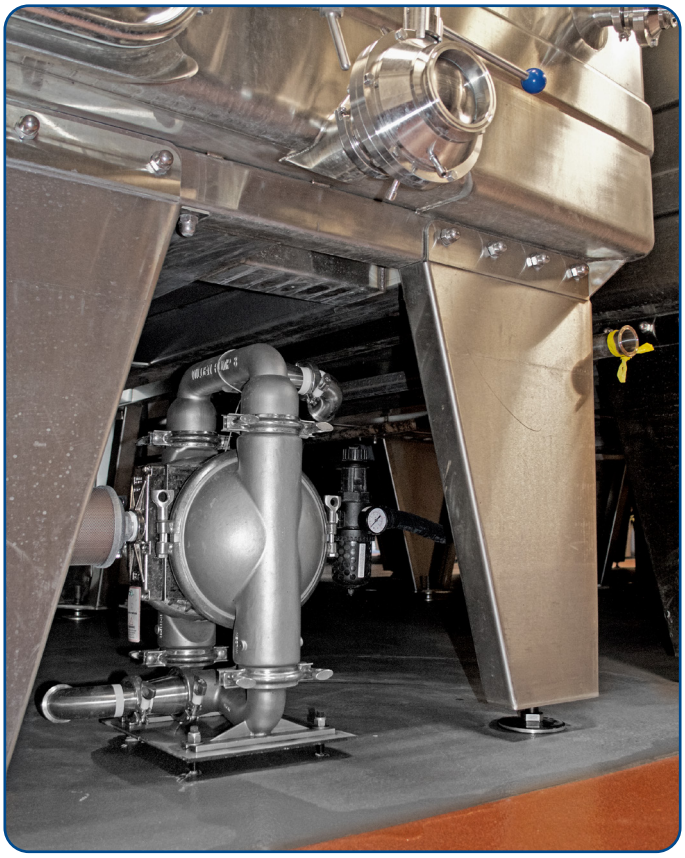
Nestled in rugged northwestern Sonoma County, CA, the remote 200-acre Cooley Ranch Vineyard produces high-Bordeaux Varietals in its volcanic soils. To best accommodate the prized harvests from this property, Rodney Strong built a new state-of-the-art cellar with 51

QUICK FACTS

Company: Rodney Strong Vineyards
Location: Healdsburg, Sonoma County, California, USA
Market: Wines
Challenge: Identify and implement the ideal pump for cap irrigation that would provide gentle product handling, energy efficiency, ease of cleaning and operational reliability
Solutions: The Wilden® FDA Series Air-Operated Double Diaphragm (AODD) pump equipped with the Pro-Flo® SHIFT Air Distribution System (ADS) and Sanitary Full-Stroke Integral Piston Diaphragm (FSIPD) for excellent sheer sensitivity, easy cleaning, long life and energy savings

stainless steel 6,000-gallon fermentation tanks. From the onset of the project, highly specialized equipment was specified to assure that the fermentation process would follow their precise standards and maximize energy and labor efficiency.

Square tanks were constructed to maximize floor space utilization compared to traditional circular tanks. Cutting-edge electronic controllers were installed on all tanks to automatically and precisely control product temperature and auxiliary support equipment operation throughout the fermentation process.



Wilden PS8 FDA Series pumps equipped with the Pro-Flo® SHIFT Air Distribution System (ADS) and Full-Stroke Integral Piston Diaphragm (FSIPD) provide maximum cleanability and energy savings for cap irrigation at Rodney Strong Vineyards.

Challenges in Irrigating the Cap

An important requirement during the fermentation process is managing the fruit cap that forms at the top of the tank in order to prevent hardening. Known as "pumping over," the operation requires the pump to draw juice from just above the seed layer near the bottom of the fermentation tank and pump it to the tank top. At Rodney Strong, the juice is sent through a flinger device and an oxygen-inducing nozzle that spread the juice to completely cover the cap and keep it wet. Juice is pumped for 20-minute periods up to three times per day.

Like many wineries, Rodney Strong has primarily utilized centrifugal pumps for this purpose in the past. However, experience has shown that centrifugal pumps tend to grind and break up any grape seeds that are sucked in by the pump and become part of the flow. The ground seeds introduce a high quantity of tannins into the wine, which adversely affects product quality. Because of this pump drawback, Rodney Strong sought to examine alternative pump technologies that would reduce – or even eliminate - grinding the seeds.

Testing Various Pump Solutions

Manuel Villanueva, Rodney Strong Cellar Master, played a key role in selecting the optimum pump technology for irrigating the cap. "We had strict requirements that the pump provide gentle product handling, energy efficiency, ease of cleaning and operational reliability," said Villanueva. "Our challenge was to identify the best technology available to meet those goals."

For assistance, Rodney Strong turned to Pumping Solutions, Inc. in Hayward, CA, USA, a leading pump and process equipment supplier that has a long history working with the wine industry. Based on Rodney Strong's requirements, Pumping Solutions Sales Engineers Pat Mooney and Ben Touzinsky suggested the AODD pump. "The first issue we addressed was product handling, and we suggested the AODD pump as the natural solution because of its excellent sheer sensitivity," said Mooney. "The AODD pump's gentle product handling circulates the liquid for the pumping over process without damaging the juice."

AODD pumps also offer a durability and flexibility not available in centrifugal or progressive cavity pumps. "Additional reasons why we proposed AODD pumps is that they have the ability to run dry with no damage, deadhead without problems and allow easy liquid flow rate adjustment by simply changing the air flow," explained Touzinsky. "They are also easy to install and operate."

Because of Rodney Strong's high standards and long-standing commitment to quality, their next step was to conduct extensive tests on AODD, centrifugal and progressive cavity pumps to determine which type would best meet their qualifications.

Villanueva oversaw the pump comparison tests. "Based on our tests, we concluded that AODD pumps are the superior pump for the overall quality of the juice in the fermentation process," said Villanueva. "The AODD pump was clearly the best in helping to extract the juices as well as control the desired tannins and color from each grape varietal that we put in. Based on those results, we decided to utilize AODD pumps."

In addition, they found that AODD pumps provided the reliability needed for their operations. "With AODD pumps, we know that when we set the air pressure, it will maintain the required flow consistently," explained Villanueva. "These pumps are extremely efficient and reliable in pumping the product through."

Wilden Wins Energy Efficiency Tests

Once Rodney Strong decided to standardize on AODD pumps, their next step was to evaluate pumps from different manufacturers for performance, quality, energy efficiency and ease of maintenance. Of particular importance was pump air consumption. "We were utilizing a smaller air compressor, so our goal was to find an energy-efficient pump that could be driven by our current equipment," said Justin Seidenfeld, Rodney Strong Winemaker. "Our staff worked with Pat Mooney to conduct extensive pump research comparing specifications, features and performance."

A critical segment of the evaluation process took Villanueva and Rodney Strong Maintenance Technician Richard Ivaldi to Grand Terrace, CA, USA, where Mooney arranged for them to conduct performance tests and examine the quality of each manufacturer's AODD pump side-by-side at the headquarters of Wilden®, part of PSG®, a Dover Company, based in Oakbrook Terrace, IL, USA.

After conducting a battery of closely monitored performance tests, Rodney Strong concluded that Wilden FDA Series pumps equipped with the Pro-Flo® SHIFT ADS are far more energy efficient than other brands. Villanueva explained, "We tested different pumps from different manufacturers so we could evaluate the performance and air consumption of each at the same air pressure. While they all will pump juice, the Wilden efficiency was an obvious benefit. Our tests showed that Wilden pumps equipped with the Pro-Flo SHIFT ADS require less air consumption (reduced SCFM) to provide the same liquid flow as pumps from other manufacturers, giving us much greater efficiency and energy savings. This was a key factor in selecting Wilden."

Reduced air consumption is realized by using the patent-pending Wilden Pro-Flo SHIFT ADS, which incorporates a unique air control spool that automatically restricts the amount of air going into the pump during the latter part of each stroke. This eliminates over-filling of the air chamber and results in reduced energy consumption. By optimizing air consumption, the Pro-Flo SHIFT lowers energy and operating costs, achieving up to 60% savings over competitive AODD pump technologies.

Easy Cleanability of Wilden Pumps and Diaphragms

Sanitary practices are critical in all winemaking operations, and pumps that move wine are required to comply with FDA CFR 21.177 standards. Wilden FDA Series pumps feature 316 stainless steel wetted parts with an Ra 1.3 µm (51.2 µin) interior polish that fully meet FDA standards.

"In addition to meeting FDA standards, cleanability was a very important factor to consider in our evaluation process for efficiency and labor savings," said Villanueva. "In comparing designs, we found that Wilden FDA Series pumps provided superior cleanability. They utilize tri-clamps for extremely quick disassembly and assembly to save labor in the sanitization process. In addition, the overall pump design makes cleaning easy. We know that good sanitization processes help assure you produce a good wine, and that's part of maintaining our high quality."

As an additional cleanability factor, Mooney suggested utilization of the unique, patented Wilden Full-Stroke Integral Piston Diaphragm (FSIPD). "We showed them the new Wilden Wil-Flex™ Sanitary FSIPD made of Santoprene™ that encapsulates the outer piston completely. This totally eliminates the cracks and crevices inherent with traditional diaphragms where the bacteria can hide."

"The Wilden one-piece diaphragm makes it significantly easier for the pump to be cleaned at the end of the season when we're done with our cap management," said Seidenfeld. "Sanitation is key in our operations to assure the highest quality product, and Wilden is the only pump manufacturer that offers this type of innovative diaphragm that is perfect for this type of application."

Rodney Strong also found the Wilden FSIPD is more efficient than conventional diaphragms. Its full-stroke design provides increased displacement per stroke resulting in higher productivity for enhanced flow rates and 115%

greater suction lift. This operational efficiency allows for fewer strokes for the same performance, which reduces energy consumption and extends diaphragm life.

Successful First Season

Rodney Strong tested the new cellar during the 2015 season, which included utilizing the Wilden PS8 FDA Series pumps for pumping over and was extremely pleased with their performance. Villanueva commented, "The performance, the high quality parts, the expert assembly compared to the competition made me very confortable in the decision to go with Wilden pumps, and we are very pleased with the results." In fact, they are so pleased with the initial order of 16 pumps, Rodney Strong has ordered an additional 43 pumps to complete the cellar.



Rodney Strong's new 10,500-square-foot state-of-the-art cellar in Healdsburg, CA, USA utilizes 51 stainless steel 6,000-gallon fermentation tanks to accommodate premium grapes from their Cooley Ranch Vineyard.

Rodney Strong Vineyards

Founded in 1959 by Sonoma County wine pioneer Rodney D. Strong as the 13th bonded Vineyards in the county, Rodney Strong Vineyards is dedicated to crafting world-class wines that capture the essence of Sonoma County. Rodney Strong sustainably farms 13 estate vineyards and produces wines from Sonoma County's finest appellations– Alexander Valley, Russian River Valley, Chalk Hill and Sonoma Coast. Purchased by the Klein family, a fourth generation California farming family, in 1989, Rodney Strong has earned the reputation for critically acclaimed Single Vineyard and Reserve wines, stand out Estate releases and best-in-class Sonoma County varietal wines as evidenced by being named Wine Enthusiast's American Vineyards of the Year in 2013. Rodney Strong Vineyards is located at 11455 Old Redwood Highway, Healdsburg, Sonoma County, CA, USA.

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