



## South African winery embraces the versatility of centrifugal decanters

Namaqua Wines, South Africa

Case story



Namaqua expanded their production capacity to more than 1 million hl/year through continuous juice extraction with Foodec decanters.

Increased juice recovery, shorter processing cycles and a less labour-intensive system were some of the expected advantages of installing Alfa Laval Foodec decanters for continuous grape juice extraction, replacing traditional separation, pressing and settling. But at Namaqua Wines in South Africa, a multitude of other benefits such as better taste and less environmental impact have revolutionised winemaking at this large-scale operation.

In the highly competitive value-for-money wine market, visionary thinking is required to stay ahead of the curve. Namaqua Wines, South Africa's second largest winery, is one of the leading players in this field and has recently expanded its production capacity to more than 1 million hectolitres per year to meet the demand for its products.

Production Manager Len Knoetze, says that extraordinary thinking is now a prerequisite to drive down costs and maintain the required quality standards. This is what led to the largest decanter installation in South Africa – comprising four Alfa Laval Foodec decanters with a combined capacity of 60 tonnes of freshly harvested wine grapes per hour.

### Capacity extension to meet global demand

Increased domestic demand and favourable trading conditions in the global bulk wine market have resulted in a gradual rise in the demand for Namaqua's value-for-money products. Improved viticultural practices, combined with vineyard expansion, meant that the cellar had the raw material to meet this demand. The production facilities could, however, not sufficiently absorb the increased crop.



The three-in-one Foodec decanters replace traditional separation, pressing and settling, reducing process time by 24 hours.

"We had to increase our white wine production capacity by 10,000 tonnes, which is much more than the average total production of most South African wineries!" comments Len. The first decision to be made was whether they wanted to expand by replicating existing processing systems, which comprise pneumatic wine presses and settling tanks.

The lucrative alternative was a continuous decanter system, which potentially had revolutionary capabilities, but also involved risk, since no one at Namaqua had experience of this new technology.

Either way, investments of this scale justified significant research and planning, and in 2010 Len and winemaker Reinier van Greunen visited wineries in France, Spain, Italy and Germany with Alfa Laval Business Unit Manager Ulrik Brasen and his team, to investigate the application of decanters.

#### Partnership throughout the whole process

Len explains that the relationship between Namaqua and Alfa Laval was more like a partnership than a typical client-supplier exchange. "Ulrik and his team are knowledgeable and professional. As part of a pioneering project they offered a 'plug-and-play' solution, while also giving valuable guidance throughout the planning phases of the installation," he added.

Separation technology has been utilised by a plethora of industries where a high level of hygiene is essential, ranging from vegetable oils and fruit juices to meat processing, with recent fine-tuning making it suitable for wine processing as well. Decanters separate solids from liquid phases in a single continuous process, using centrifugal forces. When subjected to such forces, the denser solid particles shift outwards against the rotating bowl wall and the liquid phase forms a concentric inner layer. Processing grape mash, the skins and the seeds are quickly dried and separated while the must

is clarified and can be directly sent to the fermentation tanks. Other sub-products can also be processed, such as tank bottoms, in order to recover high value products.

Reinier says that experiencing the working of decanters during this trip confirmed what the brochures had promised, but also opened his mind to the specific applications that these machines could have back on home soil. "An innovative approach has always been part of the culture at Namaqua, which is probably why we are drawn to most new technologies," explains the young winemaker.

Namaqua's board of directors agreed to the installation of a decanter system, on condition that the machine "pays for itself" through improved efficiency and higher juice recovery. This was a challenge that the winemaking team gladly accepted and with no time to spare, 2012 was the maiden vintage for the decanters at Namaqua.



The four Foodec decanters process up to 60 tonnes grapes per hour.



### Three-in-one process doubles efficiency

Some of the obvious advantages of using decanters came to the fore immediately. Substituting static pneumatic pressing, and particularly juice settling, with one continuous process reduced the processing time from when the grapes enter the cellar door to when the juice is settled in tanks by as much as 24 hours. Similarly, because one continuous process replaces three different conventional steps – free flow separation, pressing and settling – the new system was far less labour intensive and also required less space.

### Better and more homogeneous juice quality

The so-called “quality paybacks” were, however, much more pronounced than the winemaking team ever anticipated. “Traditionally the free-run juice would be considered to be the best fraction of a ton of grapes. This part would in fact be much better than the final press juice fraction. With the decanter’s continuous process, the quality of the juice is homogeneous and proportionately better than would be the case with conventional techniques,” explains Reinier.

Namaqua’s quality control comprises chemical analyses, as well as sensory evaluation. In both cases samples from the decanter more often than not outperformed those made using conventional techniques and equipment. The laboratory analyses also revealed that juice from the decanter was typically cleaner, with virtually no wild yeast cells.

### Yield increase of up to 20%

In addition to the increased quality, the quantity of juice recovered from the grapes also increased by as much as 20%, depending on the varietal and origin of the bunches. Even though the decanter system was acquired predominantly to increase white wine production capacity, it proved to be a handy asset in the production of red wine and rosé as well. In the case of red wine production, the grapes would go through a thermovinification process that speeds up colour and tannin extraction, before it reaches the decanter.

### Easy fine-tuning to different grape sorts – and less use of water and energy

At Namaqua, the “mash” is then processed in a conditioner that, depending on the setting, breaks the skins and pips, releasing the natural tannins of the grapes – a process used in some regions of the winemaking world. “The conditioner



20% more juice is extracted from the grapes when using decanters.



Production Manager Len Knoetze and Winemaker Reinier van Greunen

has proven to be a practical winemaking tool that can be applied to make different styles of wine,” says Len. On a faster setting, the skins and pips are broken up into a fine mulch to extract as many tannins as possible, resulting in darkly coloured wines with higher natural extraction of tannins. The latter has also meant that fewer tannin additions were required. A slower setting is selected for rosé, extracting just enough colour to present that popular salmon-pink hue.

Although the system is fully automated, Reinier explains that the operator still has the opportunity to display his or her winemaking finesse by fine-tuning the settings according to the specific batch that is being processed, and the desired outcome or style of wine. “After two harvests with the new system, I’ve come to realise that in order to really make the best of every batch of grapes, the winemaker needs intimate knowledge of the machine. Different grape varieties – and often even origins – require different settings and treatments. I’m not talking about major alterations, but slight differences that could be the difference between a good and a great product,” he says.

Certain grape varieties such as Hanepoot and Muscadel often create a mess while pressing, because of their sticky juice and higher viscosity. These are, however, easily processed by the centrifugal decanter, which is also easier to clean. Compared to a conventional system, comprising pneumatic presses and settling tanks, the decanter requires less water, while it also uses less energy.

### Minimum maintenance

Maintenance was initially a key concern to the Namaqua winemaking team, because their operations are based in a rural and isolated area and no one in the region has experience in working with this specialised technology. Reinier was, however, pleasantly surprised by the system’s robust functioning. “There are only a few moving parts that could require attention and some basic training is sufficient to perform day-to-day maintenance. The system has now done two vintages, processing almost 35,000 tonnes of grapes in total. During this time, I only needed external assistance once – and that particular problem was also resolved by Alfa Laval’s local service team in two hours,” says Reinier.



Namaqua Winery, a pioneer in modern winemaking and new efficient and energy saving production methods.

#### **Sharing training and experience across the wine world**

As part of this pioneering effort, Namaqua agreed that Reinier would assist Alfa Laval's wine business unit by consulting other wineries during their installation process and initial wine-maker training. He went for training in Spain and Italy and comments that assisting other wineries with their installations is an exciting challenge that also offers him the opportunity to learn about other cellar setups and philosophies.

"I have now shown the technology to many other cellarmasters and would certainly not hesitate to put them in contact with Alfa Laval. This is definitely the direction in which good value wine production is heading and we need, with the continued support of Alfa Laval's wine team, to continue to innovate by optimally utilizing the equipment," says Reinier.

Len has already revealed that Namaqua would definitely consider incorporating decanter technology in any future expansion. He adds that working with a blank slate is less complicated – and even less expensive – than trying to incorporate existing conventional technology processes with the modern system.

#### **Other business opportunities outside the wine season**

"The versatility of this technology is astounding," says Len. "We are now successfully using it to produce several styles of wine, across a broad spectrum of price points. In addition to this, we are considering the merits of also using the machine to process other crops, like tomatoes and oranges, which also abound in the area and will not interfere with our core business of winemaking."

Namaqua is indeed yielding the fruits of staying ahead of the curve and it now seems that the decanter system will certainly bring about even more advantages than the cellar team initially expected. As Len puts it, "We did not conform to the conventional, by putting a new spin on things. And, it seems we got even more than we bargained for!"

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#### **How to contact Alfa Laval**

Up-to-date Alfa Laval contact details for all countries are always available on our website at [www.alfalaval.com](http://www.alfalaval.com)