

## VOLVOTERMOTANK

### ROTATING BLADE FERMENTATION TANK: 20 HL TO 200 HL

It has been said that: “the vinification of red grapes is a simple matter of extraction.”

While the concept is simple and clear, it also states the vital importance of the handling of the grape solids that form the cap. The Albrigi philosophy fully supports this concept, not only, but it embellishes on it by adding “with a very low production of grape solids.”

The aim of VOLVOTANK can, therefore, be summarized in these two phrases.

The importance of gentle pressing is well known, as is the importance of gentle crushing, and we have now also created the possibility of gentle punching.

Volvotank’s internal blade caresses the grape solids that have risen to the top and submerges them in the must below. But there is more. Volvotank does not limit itself to simply bathing the grape solids, nor does it submerge them in the must in a discontinuous manner but through the adjustable and very delicate rotation of the blade it submerges all of the floating grape solids. This delicate action makes Volvotank ideal for handling all grape qualities, both the tender and tough varieties, fresh, withered and saignée; and it is precisely in those cases where the percentage of grape solids is higher that Volvotank demonstrates its uniqueness, being able to leach all of it in a uniform, delicate and constant manner that is not limited, as with other equipment, to working only with the upper part of the cap which, among other things, is decidedly negligible compared to the totality of the cap present.

Energetic extraction using mechanical means (turbines, pumps, punching pistons, etc...) or by physical means (various gases, gravity induced descent) is also very common, but these methods result in the rough treatment of the grape solids which then results in a considerable production of lees. Pumping-over operations meant to leach the cap “are the main parameter when it comes to diffusive phenomena which comes about during maceration. The frequency and the moment these operations are performed can drastically alter the characteristics of the end product. It should be pointed out, however, that, as is the case of all mechanical operations, if they are incorrectly performed they can cause damage and therefore grape skin dilaceration.” *Vivas*

The lees, as a by-product, noticeably increase production costs, slow the static clarification process and absorb, seeing as it is made up of solid parts, large amounts of anthocyanins.

A comparative analysis performed on identical batches of grapes, with other types of fermentation tanks, showed that the extraction Volvotank achieves is more consistent and significant:

- Colour intensity: from +31% to +52% depending on the pumping-over system it was compared to
- Total anthocyanins: from +40% to +44%
- Total polyphenols: from +13% to +19%
- Glycerol: approximately + 7%

The constancy of the extraction is evident by continuous and progressive positive change in optical density (OD) 420 - 520 – 620, day after day.

This particular feature of Volvotank becomes essential during the vinification of withered grapes. The main feature of these grapes in fact, in addition to high sugar concentrations, is that they have enriched compounds which came about from the substantial biochemical transformations which took place during the withering process.

These transformations are the result of various organic acids:

- Tartaric, malic, succinic and citric

– Anthocyanins and total polyphenols

Not only, but in the case of grapes affected by "noble rot" there is a notable increase in the production of glycerol and gluconic acid, considered a marker for wines made from withered and botrytized grapes and a "sequestrant for tartaric precipitation, with significant influence on the precipitation of calcium tartrate." T. De Rosa.

In recent years, research has also shown that the presence of resveratrol, polyphenols which are believed to have anti-inflammatory and anticoagulant properties, are useful in the prevention of atherosclerosis and cardiovascular diseases, as well as promoting "good" HDL cholesterol. However, the extraction of all of these important compounds is not a rapid process and cannot be done in an approximate or superficial manner, but is only obtained with a continuous and progressive leaching.

The ability to regulate the velocity and the rotation cycles of the blade, which influences the number of times the cap is stirred, is of fundamental importance. Studies conducted by Amrani and Joutei have shown that the anthocyanins are those substances that are solubilized first, followed by the tannins in the grape skins, while the tannins in the seeds take longer to be extracted, with a maximum extractability of 50%.

The internal rotating blade, which is connected to temperature control mechanism, and the external jacket, make it easy to keep the temperature of the tank's content low in the case of pre-fermentative maceration both for red and white grapes, thus eliminating the use of exchangers which mix the crushed grape-solids mechanically. In these cases, it being that the convective motion created by the cold descending currents and the hot ascending currents may not be sufficient to keep the temperature uniform in the compact mass of the just-pressed must, certain movements of the internal blade must be done on a daily basis.

Volvotank is also an optimal cyro-macerator and, with its rotating blade, can perform bâtonnage operations as well.

Regulation of the fermentation temperature is assured by the large surface areas of the outer jackets and the rotating blade that refreshes the air over the entire surface, including the borders.

The presence of a micro-macro-oxygenation station allows for:

- macro-oxygenation during fermentation in order to ensure the vitality and renewal of the yeast cells, which ferment even for prolonged periods of time and, in the case of withered grapes, for many days and with a resulting high alcohol content.
- micro-oxygenation as fermentation comes to an end. The aim of this technique can be summarized by the words of Prof Moutounet: "It is commonly known that phenolic compounds are mainly responsible for the consumption of the wine's oxygen. After the effect of the oxygen, they undergo various chemical transformations. A key compound in the evolution of the pigmentation of red wines is acetaldehyde, which has its origins in the oxidation of ethanol which, acting as a bridge in the condensation reactions between anthocyanins and tannins, leads to the formation of highly coloured and stable compounds.

Another fundamental benefit of the technique of micro-oxygenation is the disappearance of plant traces and an increase of reductive power thanks to stages of structuring and harmonization which lead to an increase in aromatic complexity."

