VEOLIA

Wine Processing

21st Century Membrane Technology

WATER TECHNOLOGIES

The Nature of Winemaking

A combination of art and science

The appreciation of fine wines traditionally brings people together. Therefore, any technology applied to winemaking must delicately enhance the process while preserving its purpose. We, at Veolia, understand that winemaking is a combination of art and science. We have learned through years of experience—working with vintners around the world—ways in which not only our filtration technologies but also our process applications can contribute to the art of winemaking.

We have seen also the realities of a marketplace in flux. The demand is for quicker production of very high quality wine products with the traditional bouquet and flavor, along with greater clarity and increased long-term stability. As filtration in various forms has a long history in winemaking, wine process engineers are often all familiar with the dynamics of filtration. Today, Veolia also presents the advantages of cross flow filtration as well as electrodialysis as a winemaking tool. As one of the leaders in cross flow filtration as well as electrodialysis, Veolia works with the vintner in finding the most productive system to protect and enhance the quality of fine wines. In addition, Veolia has multiple offerings to support any water and wastewater applications that a vintner may have.

Filters for All Applications

Depth Filters

To maintain product quality, wineries may need to remove large particles from process water. Veolia has a number of different depth filter products for these applications, such as our Hytrex* GX filters or ZCore* and Absolute.Za* depth filters. All of these filters come in a wide range of micron ratings and lengths to meet most winery requirements.

Prefilters

Prefiltering protects the more expensive final filters, thereby lowering the vintner's overall filtration costs. For winemaking, Veolia 's Flotrex*-GF glass microfiber filters are an excellent prefilter. Their glass fibers do not leach any flavor-altering substances. They have an absolute micron rating range of 0.45 to 3.0 microns which allows the assembly of filter trains specifically for each winery and application.

Pleated Filters

Veolia offers a wide range of pleated microfiber and membrane cartridge filters specifically designed for the beverage and winemaking industries. The Membrex*-MP-B filters combine low protein binding characteristics with high throughput, and offer exceptional cleanability to reduce operational expense.

Cartridge Filter Technology

Assisting Throughout the Winery

The following review of cartridge filter technology demonstrates that today's filtration technology can assist the vintner throughout the winery to enhance product quality, improve process efficiency and extend product marketability through longer shelf life.

Crystal Removal

Absolute.Za cartridge filters make the fining and chilling steps more efficient. In white wines, these filters remove tartrate crystals; in reds, they reduce excess tannins and unstable pigments. The Absolute. Za cartridge filters have a range of 0.5 to 10 micron, which help remove the tartrate crystals and reduce tanins and unstable pigments.

Clarification

The clarification steps remove colloids and particles to help polish the wine. Clarification can follow each storage of the wine. Absolute.Za depth filters in the 0.5 to 10 micron range complement our Flotrex pleated microfiber filters having a range of 1 micron up to 40 micron for the clarification steps.

Microbiological Stabilization

A filter train of up to three filters removes microorganisms, such as yeast cells, to improve the quality and shelf life of the wine. Typically the three filters perform additional clarification, prefiltration and final filtration. Each winery has different conditions. Because of this, filter trains are individually selected to maximize efficiency and to reduce downtime. Clarification usually uses an Absolute.Za depth cartridge filter, while prefiltration usually uses a Glass Fiber Flotrex pleated filter. Final filtration would use a Memtrex® pleated cartridge filter with an absolute micron retention rating of between 0.20 to 0.65 microns. Specifically a Memtrex-MP-B, which is a polyethersulfone (PES) pleated cartridge filter, would be used for protein-laden solutions. A Memtrex-NY, which is a hydrophilic Nylon 66 filter, would be used for pure chemical, water and wine filtration. Both the Memtrex-MP-B and Memtrex-NY filters are steam sterilizable.

Bottle Washing

Ozonated water is often used to wash bottles prior to filling. During the wash process a 0.2 micron Memtrex-MP-B cartridge filter is used to assure the bottles are free of bacteria and particulate matter. With the washing process, it is recommended to have a prefilter in front of the final filter for protection.

Utilities

Utilities within the winery encompass filtering not directly involved with the must, juice or wine. These include sterile gas filtration, clean-in-place (CIP) particulate filtration of chemicals and CIP water prefiltration and final filtration. Veolia offers a wide variety of filters for the different utility applications, including filters for sterilized atmospheric blankets using a 0.2 absolute micron hydrophobic cartridge filter with a PTFE membrane.

Spiral Wound Membrane Technology

Membranes for All Applications

Veolia does extensive research to find the right materials for membrane performance and serviceability. Working with vintners, we have found ways membranes can enhance existing processes or replace less efficient technology. Spiral wound membranes can perform several types of filtration from microfiltration to ultrafiltration, nanofiltration and reverse osmosis.

Concentration

Veolia 's membranes can be used to adjust and concentrate some of the constituents in grape juice and wine. Reverse osmosis and nanofiltration membranes are effective for increasing sugar levels, color substances in young wines, and alcohol concentration.

De-alcoholization

When alcohol reduction or removal is desired, we have membranes that can be used to remove alcohol from wine.

Clarification

With Veolia's J-Series membranes, clarifying can be done at various steps of the process. For example, before wines are sent to the aging tanks, membranes can remove haze, tannins and yeast to make the aging process more efficient and to enhance product quality.

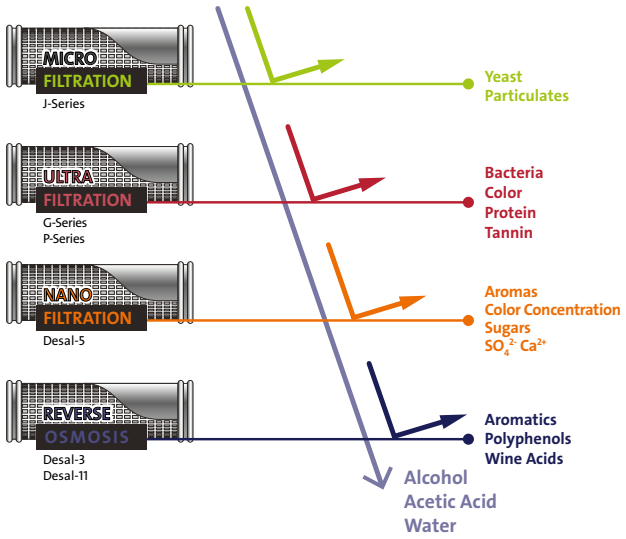
Color Removal

To enhance product appearance with either total or partial color removal, a selection of Veolia 's spiral wound ultrafiltration membranes can produce precise results.

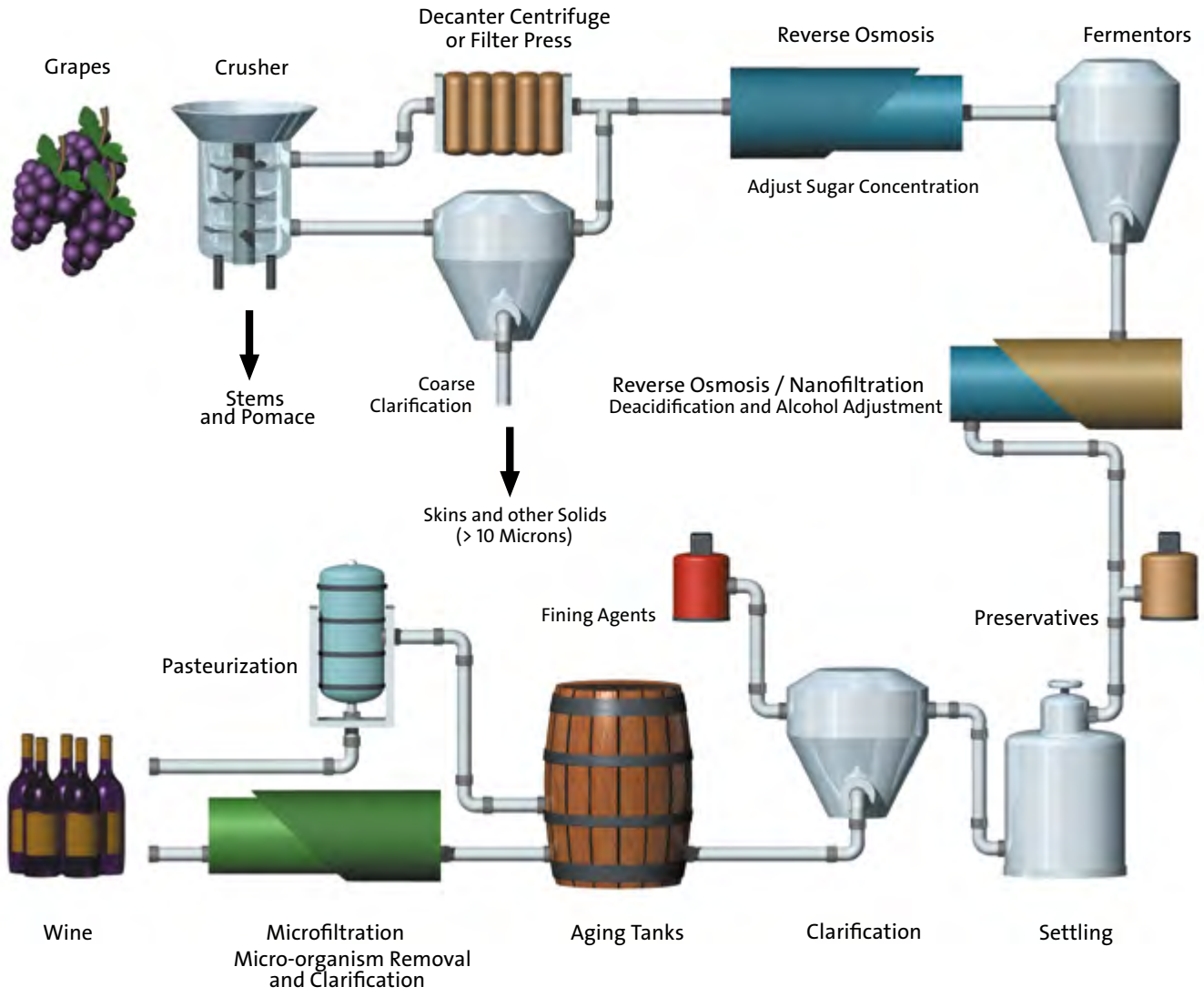
Cold Stabilization

Cold stabilization of wines is typically done using a cation exchange process that aids the tartrate stabilization by removing the potassium ion. Without this process, the wine has to be subjected to cold temperatures for longer periods of time.

In some wineries, both processes (cation exchange and longer exposure to cold temperature) are used to ensure that wine is cold stabilized. Veolia has two different technologies that can help reduce exposure to very low temperatures or remove the entire process step. Under certain circumstances our nanofiltration and reverse osmosis membranes can be used to concentrate potassium bitartrate and therefore speed up the precipitation process and reduce exposure to very low temperatures.



Membrane Filtration



Electrodialysis Technology

Tartrate Stabilization

Wine and grape juices contain tartrates, which can precipitate in the finished product if not removed. Vintners can use methods such as cold stabilization and ion exchange to stabilize the tartrates which use significant amounts of energy and operate in a batch process. Veolia 's electrodialysis (ED) technology provides many advantages over these methods and is recognized by the International Organisation of Vine and Wine (OIV) as a "good oenological practice" for the treatment of all wines.

pH adjustment of wine and grape juice

Depending on the requirements of the vintner, Veolia 's bipolar electrodialysis (BPED) technology can be used to not only adjust the pH, but also remove potassium. The adjustment of pH will allow for a consistent product acidity.

Water and Wastewater Technology

Reverse Osmosis

Veolia has over 40 years of experience with treating water through reverse osmosis (RO) technology. With manufacturing sites in North and South America, Asia and Europe, more than 100 standard and custom RO systems are built each year. In addition to the complete RO system, Veolia also manufactures stainless steel RO pressure vessels, stainless steel cartridge filter housings and our Tonkaflo pumps. Manufacturing all of these components as well as our filters and membranes makes Veolia truly vertically integrated, so it is a one stop shop.

Ultrafiltration

Veolia is one of the world's leading ultrafiltration (UF) manufacturers. Depending on your needs and requirements, Veolia can offer pressurized spiral wound UF, Inside Out, as well as Outside In Hollow Fiber UF in addition to our submersed UF. From clarification of wines to filtering water for use with the vineyard our ultrafiltration technology can help.

Microbiological Reactor

Veolia is one of the world's leading microbiological reactor (MBR) manufacturers. Utilizing our submersed UF membrane, our MBRs can treat organic waste streams that may be produced as a bi-product of winemaking.

Resourcing the world

Veolia Water Technologies
Please contact us via:
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