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TECHNICAL ARTICLE

Filters with Ceramic Membranes: Quality, Efficient & Green

With the current economic environment, a key focus for winemakers is to reduce production costs without compromising wine quality. The pressure is on to reduce the environmental impacts of winemaking, too.

Cross-flow filters in general address both issues squarely, but cross-flow filters with ceramic membranes take both production cost reduction and environmental impact reduction to the next level, while at the same time offering a wine quality advantage compared to other types of cross-flow filters.

How exactly do cross-flow filters reduce costs and environmental impacts?

- Cross-flow filters are versatile: they can replace most of the different types of filters previously used in the different stages of winemaking - juice filtration during vintage, filtration after fermentation, and even pre- or post- cold stabilisation.
- No messy filter aids are needed, so money is saved, and product losses are reduced because you don't throw away residual wine in the spent diatomaceous earth, pads, cartridges, etc.
- The impact on the environment when spent filter materials must be disposed of is entirely eliminated, as is the hazard to operator health and safety incurred in handling nasty DE.

Why Della Toffola's cross-flow filters with ceramic membranes?

An established technology with an excellent track record, a number of companies in both Australia and New Zealand are enjoying the benefits of Della Toffola ceramic membrane



cross-flow filters, including Australian Vintage Wine Group, Nautilus Estate in Marlborough, Yalumba and Casella Wines. “We have completely eliminated the need to filter wines in the cellar door prior to bottling”, commented John Casella.

The key innovation is the ceramic membranes themselves. Cross-flow filters with ceramic membranes are not new. For over 50 years the petrochemical and pharmaceutical industries have favoured filters with ceramic membranes for two main reasons - their durability compared to other types of cross-flow filter membranes, and their ability to deliver longer filtration runs at more consistent flow rates.

Superior durability means they are not only resistant to high temperatures, so they can be heat sterilised with steam and hot water, but also to corrosive chemicals, so less time is needed for cleaning.

Also thanks to their ruggedness, they can withstand pressure shocks, which would rupture other types of membranes, and they need less maintenance. Ceramic membranes typically last for at least ten years, up to five times longer than organic membranes.

The ability of cross-flow filters with ceramic membranes to deliver longer filtration runs at more consistent flow rates means that filtration can be fully automated, with minimal operator input required. Inefficient batch filtrations can be replaced by continuous operations.

Moulding a membrane to suit wine

It has taken Della Toffola many years of patient research and development to adapt ceramic membrane technology to the specific exigencies of winemaking. What has been learnt through extensive R&D in Australia and New Zealand, is that wine is impacted by many variables, from season to season, winery to winery. The Della Toffola ceramic membrane has demonstrated the ability to adapt to the variables and meet wineries’ unique requirements.

Della Toffola’s unique membrane design minimises damage to wine through shear and recirculation, problems which have plagued cross-flow filtration as applied to wine up until now. The ceramic membrane’s solid structure enables a wider bore/channel design compared to organic membranes and their ‘green’ credentials are far superior to polymeric alternatives, which are non biodegradable and have a vastly shorter life span. The strength of the ceramic membranes permits a membrane configuration in which the membranes themselves absorb the rough treatment, instead of the wine.



Another quality advantage stems from the near linear profile of filtration with Della Toffola's system, which enables automation, with pre-programmed filtration cycles selectable to suit a particular wine's characteristics.

And Della Toffola's modular design enhances the maintenance advantage, too. When an individual older style membrane fails, it is notoriously difficult to isolate. But with a Della Toffola Cross-flow Filter, a simple clarity check followed by an integrity check identifies the faulty membrane, which can then be isolated, and replaced after the filtration run.

Della Toffola is exclusively distributed by Australian & New Zealand Winemakers P/L. For further information, call (03)9924-4060 or visit www.ausnzwinemakers.com

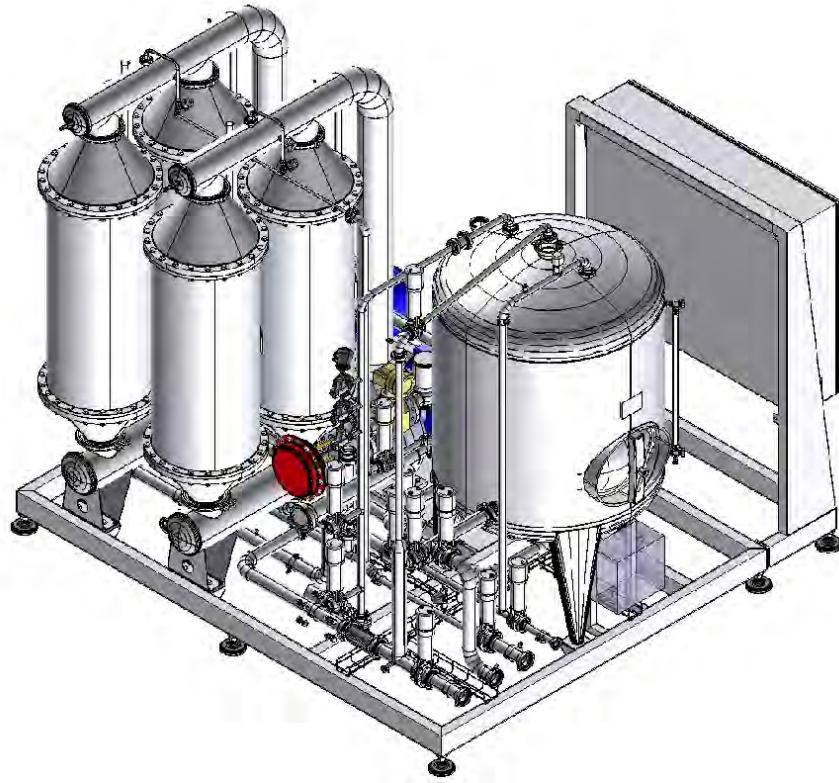




Della Toffola Ceramic Membrane Cross Flow 'A' Series Filter



Della Toffola Ceramic Membrane Cross Flow 'N' Series Filter



Technical drawings of the Ceramic Membrane Cross Flow Filter