

A pressing issue: throughput and the big picture

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Looking at the queue of grape delivery trucks waiting for hours in the hot Australian vintage sun is enough to send chills down the spine of any hardened cellar manager. It does not take many years in the game to understand that when vintage hits, it hits with an intense burst of activity. Grapes are received in a narrow window of opportunity and for quality's sake the faster the grapes get from trucks through destemmer crushers and in the case of white wine, through a press, the better it is for the entire wine and winery.

Grape receival bins and layouts can provide fast intake of fruit and destemmer/crushers exist which are capable of processing in excess of 100 tonnes per hour. A bottleneck in current Australian winery process flow can be caused by side



Della Toffola central membrane press technology.

membrane bag tank presses. By the very nature of their design, side membrane tank presses have little allowance for drainage and separation. With half the press tank surface area being covered by the pressing membrane bag, the other surface area must accommodate for drain screen area and discharge doors. Almost all side membrane presses can only provide 20-25% maximum press tank surface area as separation capacity. For large wineries, this has serious implications.

Confusion reigns as to how press cycle times are calculated in the winery. Press cycle times should include infeed and drainage separation speed, press extraction time and discharge time. The accumulation of these three steps would provide cellar managers with a clearer

the last word in stainless steel fabrication



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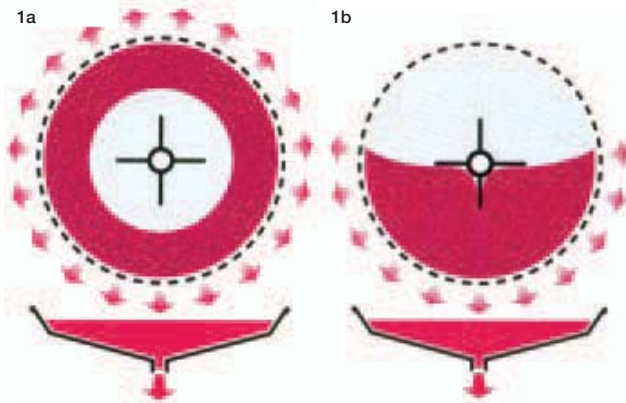


Fig. 1a: Central membrane press technology and b: side membrane press technology.

understanding of how throughput can be best managed. With greater surface area for drainage comes greater surface area for pump pressure to evacuate. If pump infeed pressure cannot evacuate, draining juice cannot efficiently discharge. This has accounted for many wineries having to leave hatch doors open during press load-in. Apart from the OHS implications for managers, this practice reduces the press operation to a static batch process. In times when wineries of all sizes seek to find greater continuous processing opportunities side membrane is not proving the answer.

The Della Toffola central membrane bag system enables the complete surface area of the tank to be drain screen area. 360° of the tank is provided as viable drainage surface area for separation of juice and pump air pressure evacuation. Apart from pragmatic engineering, consider that fast effective juice separation is key to providing juice low in polyphenols. Low phenols is what 'soft pressing' is all about.

This year, working with Della Toffola tank presses, wineries were able to infeed at 100-130 tonnes per hour into the central membrane presses. The 480hl tank presses on site achieved infeed loading of 110-120 tonnes, finalised within one hour.

The pressing extraction cycle needs to be fast. The greater the surface area from which to compress the membrane bag the faster and more efficient the extraction process will be. Consider that for central membrane presses the radius of extension of the membrane bag is only half that of side membrane presses. This unique design feature enables the membrane bag to be extended and retracted in half the process time it would take a side membrane bag press. Further, consider that having greater separation area onto which the membrane bag can extend also ensures that the resultant marc is pressed dryer and to dryer capacity in a faster cycle time than any other press design.

Relative to this performance, the central membrane design lends itself to close peripheral benefits. Press extraction times are dependent on issues relating to available air pressure. The size of the air tank receiver, for example, impacts on the performance of the press's extraction speed. Yet as central membrane presses are required to extend their bag pressure near half that of side membrane presses (1.6 bar versus 2.4 bar for side membrane presses) the air requirements for a Della Toffola press is far lower.

Cycle times also impact on suspended solids. Pressing surface area with a central membrane press design is 360°. Drain area separation occurs at every point and on every tank rotation. This is not the case with side membrane presses, every rotation of the tank would only allow separation to occur 50% of the rotation time. Every moment separation does not occur, suspended solids are able to accumulate. A central membrane press design will assist in reducing suspended solids, this has a direct impact on reducing the loads on downstream centrifuge requirements and overall winery losses.

Another important dimension to consider in regards to throughput and cycle time calculation is pressed marc discharge times. The central membrane press design enables two side hatch doors at either end of the tank axis to open and discharge pressed marc. Wineries using the central membrane presses achieved 15 minute discharge times during vintage 2005. Compare this with the side membrane alternative and discharge times which can be anywhere in excess of one hour.

Time is money as the old saying goes! With ever-larger grape parcels to process, and the ever increasing requirement to process them cost effectively, analysis of the current process flow within the winery is very important. Today destemmer/crushers are available to assist in clearing the queue of grape trucks. Destemmer crushers can feed presses at very fast loads.

Considering whether your press can handle the throughput is key to understanding whether you are purchasing a good investment or something that could cause a bottleneck and suffocate your winery. Many wineries purchase a press without understanding the implications of their choice.

The grape press is regarded as the beating heart of any winery operation. A press must enable the fastest possible intake tonne per hour, enable the fastest juice separation, whilst minimising polyphenol extraction and suspended solids and must enable the fastest marc discharge to allow a new press load to quickly take its place. Central membrane press technology offers the fastest and best overall process performance and the best investment choice for cellar managers and winemakers.

For a brochure and video of the central membrane press technology please contact Australian Winemakers, (03) 9486 8200 or email sales@australianwinemakers.com.au



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