

# Considerations when choosing a pneumatic wine press



The basic design principle of the pneumatic wine presses is widely known: a horizontal rotating cylinder with drainage ducts, housing an inflatable bladder or membrane running in line with the drum axis.

When compared with other methods of batch pressing, e.g., vertical basket presses, pneumatic presses typically enable higher fill capacities; incorporate the tumbling and redistribution of grape matter (via rotation/tilting of the drum) to open up new channels for juice run; and typically give higher yields. However, the general perception remains that vertical basket presses press more gently, resulting in less suspended solids and less damage to skin and seeds. Over the decades pneumatic presses manufacturers with good R&D capability have incorporated various design features to address these issues and pneumatic presses are the most common choice in most medium to large scale wineries, not just because of the overall production efficiencies they bring.

## Considerations

When choosing a pneumatic wine press, general considerations can include:

1. The amount of fruit you want to press in a day (minimum/maximum), and yearly

2. Whether you are pressing whole clusters, destemmed/crushed, and/or fermented mass
3. Juice quality requirements
4. Wine styles if applicable
5. Any expansion plans you may have for production
6. How you want to fill the press, e.g. tipping, via conveyor, or via pump (door/centrally)
7. Your budget.

## The manufacturers

For the purpose of this article, we are focusing on pneumatic presses manufactured by Willmes GmbH, whose engineers invented the pneumatic grape press in 1951; and Enoveneta S.p.A, founded in the 1962 and based in Veneto, the largest wine producing region by volume in Italy.

## Willmes Presses

Willmes are renowned for producing high-end wine presses. With 70+ years of research and development behind them, it is no surprise that they have set the bar high in terms of technologically advanced features on their Merlin and Sigma presses which not only reduce pressure but maximise juice quality. The tests they have carried out in order to compare their performance with conventional pneumatic presses resulted in the following:

- **50% lower pressure:** Willmes presses have a patented double-sided membrane, as opposed to a single-sided membrane, which brings a substantially larger (double) area of pressure application. This means less pressure expenditure and less compression of the material to be pressed at the same force—and this acts uniformly from all sides of the material to be pressed. In physics there is a relationship between pressure (P), force (F) and bearing surface (A). If the area of application doubles, pressure is halved at the same force  $[P=F/A]$ .
- **<40% (Merlin) & <70% (Sigma) lower lees:** This is all due to the lower pressure, fewer rotations and fewer pressing cycles. The gentle processing of grapes frequently result in 2% lees, therefore the juice yield (10% more premium quality juice) and must quality are significantly increased.
- **25% (Merlin) & 30% (Sigma) more filling quantity:** The design of the press body, the vertical filling and the vertical juice channels mean that the juice can flow directly into the filling channels without any need to rotate the body for optimal pre-juicing results. Vertical filling is more efficient and much gentler, for quality, than axial filling.



• **Yields <90% (Merlin) & <95% (Sigma) at pressures of less than 0.8 bar:** The short juice paths through the vertical juice channels and the double area of pressure application result in impressive juice yields. The Merlin has perforated stainless steel juice channels, and the Sigma has Flexidrain® juice channels encased in Perfect-Flow mesh. If the press membrane is relieved of pressure, the material to be pressed falls together. All these features make the rotational effort for crumbling negligible and fewer pressing cycles are required. This results in high quality must, with pressing times reduced by 30%. The Merlin and the Sigma can include additional press programs approved and certified by The Comité Champagne (CIVC), as an optional extra.

## Enoveneta presses

Enoveneta presses utilise the traditional single side membrane technology and are available in two types:

- The 'open' cylinder version includes drainage channels on the outside of the drum (50% drainage surface), the width and quantity of which have been configured to improve the separation between the solids and the juice.
- The 'closed' cylinder version features internal drainage channels (45% drainage surface) aligned horizontally and mounted against one side of the inner wall of the cylinder. These channels are trapezoid in shape and designed to minimise the accumulation of lees in the crumbling phase. A circular drain is positioned at each drainage channel for continuous and maximised draining. The mechanical chain transmission of the cylinder results in a smoother and gentler rotation. The software on all Enoveneta presses is Industry 4.0 ready, a technological

standard for control and management via PLC, which allows remote access, diagnostics and interconnection between other Industry 4.0 machines already in the winery. Enoveneta's manufacturing standard is high, and their presses are robust and user-friendly.

## Summary

Both Willmes and Enoveta presses are easy to use and available with a good range of optional extras to cover axial loading, automatic cleaning, inert gas injection, etc. In terms of price, Willmes' technological advances over the traditional single sided membrane model of pneumatic press inevitably mean the price of a Willmes press is higher; for the Sigma, Willmes' 'flagship' model, it is significantly higher. The Enoveneta range is very competitively priced.

Both manufacturers use different membrane technologies and their suitability depends much on the specific requirements (and to some extent the constraints) of the winery.



WILLMES SIGMA FLEXIDRAINS AND MEMBRANES



	Enoveneta	Willmes
<b>Capacity of presses (whole grapes)</b>	0.6 – 65 tonnes, depending on model	0.9 – 23.8 tonnes, depending on model
<b>No. of models / sizes available</b>	3 / 14	2 / 17
<b>Technology</b>	<ul style="list-style-type: none"> <li>• Single side mounted membrane</li> <li>• + Drainage channels (closed model only)</li> </ul>	<ul style="list-style-type: none"> <li>• Double sided membrane with vertical discharge juice channels</li> <li>• + Flexidrain® (Sigma only)</li> </ul>
<b>Programs (pre-set)</b>	6	12 (CIVC certified, as option)
<b>Program creation facility</b>	Yes	Yes
<b>Industry 4.0 technology</b>	Ready; connection as option	As option
<b>Axial fill</b>	As option	As option
<b>Inert gas injection</b>	As option	As option
<b>CIP automatic cleaning</b>	As option	As option



To discuss Willmes and Enoveneta presses please call Vigo Ltd on 01404 892 100  
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