Equipment evolution: Pressing (continuous)

Simon Nordestgaard

The Australian Wine Research Institute, PO Box 197, Glen Osmond (Adelaide) SA 5064, Australia

Corresponding author’s email: simon.nordestgaard@awri.com.au

Drive for productivity - but without too many solids or phenolics...

While there were major advances in batch pressing technology in the late 1800s, pressing was still a very slow process. This fostered interest in continuous presses. Many continuous press designs were launched in France in the 1990s. The Archimedean screw press quickly came to dominate this category.

Larger diameter with slower RPM

Juice solids levels are often high with Archimedean screw presses. The use of larger diameters and slower speeds reduced this somewhat.

Bi-valve feeding plate

This alternative to the clover wheel invented in c. 1970 better prevented backflow. Presses with this design also used less power since there had been a lot of friction between the clover and screw.

Peristaltic pump and hydraulic press

In 2015 Diemme released a new press for fermented pomace. It uses the combined action of a peristaltic pump and a hydraulic press. There is no screw or crumbling and is claimed to give lower solids than a batch membrane press. However, the lack of crumbling means that yields would be insufficient with fresh grapes.

Harvester-mounted

The small footprint of a decanter led to trials mounting one on a machine-harvester to juice white grapes directly in the vineyard. This is not yet commercially available.

Sources include: Fatine (1946), Ferrouillat (1894), Roos (1900), and many equipment suppliers.

Counter-rotating feed screw

Some designs featured a counter-rotating screw to feed material into the pressing chamber without backflow. Other designs featured side-by-side screws for this purpose.

Feeding wheel

Clover wheels were another method of feeding material into the pressing chamber. This mechanism was widely used from the 1890s to the 1970s.

Prior draining

Early designs often featured in-built crusher rollers, making them an all-in-one juice expression solution. However, prior crushing and draining allows the press to more efficiently grip and press the cake (the press shown has no crusher rollers).

Rollers

Several roller presses were launched in the 1890s. They were apparently soon abandoned. They likely produced low yields with high solids.

Belt presses have intermittently been trialled in the wine industry but give juice with high solids content and can be difficult to clean.

Pneumatic

A newer variation on the continuous pneumatic press was launched in the 1990s by Siprem. It consists of a partitioned tank with pressing by a membrane in each section. Tank rotation facilitates crumbling and conveyance to the next section.

Archimedean screw

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Decanter centrifuges

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Wine Australia

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