



REQUIREMENTS

INSTANT WINERY! No infrastructure needed. No installation. No water usage. No wastewater generation. No building permits. No expensive press to purchase, maintain and clean. Fully automated punch – just set and forget. Estimate 2-4 manhours /batch total. Here is a quick guide to winemaking in the GOfermentor and the equipment required. For detailed operation please consult the Operating Manual and website www.GOf fermentor.com.

Red Wine:

Filling:

Red wine is made using red grapes. The color and tannins are extracted from the skins and seeds, and we do not recommend making red wine from juice or concentrates. Grapes can be received in clusters or machine picked (destemmed and partially crushed).

1. Using grape clusters: Grapes are typically attached to the stems in clusters. Grapes can be destemmed using a mechanical destemmer. An example is shown below:

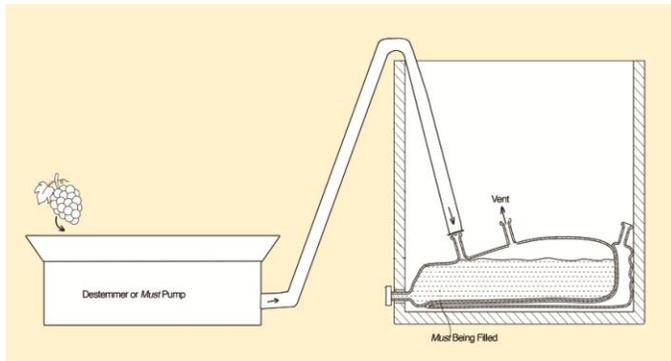


Motorized destemmer/crusher with built-in grape pump. About \$ 2000 from morewine.com

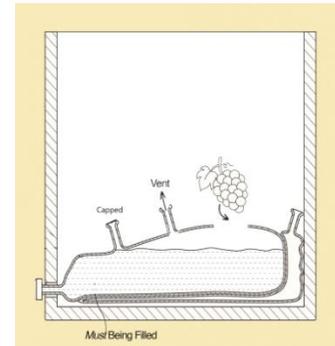
The destemmed grapes can be crushed using optional rollers below the destemmer or left uncrushed altogether or in part (resulting in fruitier wine with less extraction). Next they are loaded into the GOfermentor liner.

2. Using destemmed grapes: The destemmed grapes must be loaded into the GOfermentor plastic bag. This is very easy if the destemmer has a built-in grape pump (such as the one shown above). Simply connect the outlet of the grape pump to a 2 inch hose and connect the other end to the front top port on the GOLiner bag. Run the destemmer to fill it with grapes. If the grapes are received destemmed, they can still be dumped into the destemmer and conveyed. If a suitable destemmer with pump is not available, a *must* pump capable of handling whole grapes should be used to pump the grapes into the GOLiner. Alternatively, grapes can be manually loaded by cutting an opening into the liner and using a hopper above the GOLiner or simply transferring grapes by hand. The

opening is closed with tape after filling as detailed in the GOfermentor Operating Manual.



Filling through 2inch inlet port



Alternate manual filling through hole in liner

Fermentation:

Each GOfermentor unit consists of a controller and an outer container (GObase). Options are temperature probe/sampler (GOtemp) and cooling plate with valves (GOcooler). Minimum capacity is 200 Kg grapes (440 lbs) and maximum is 900 Kg (2000 lbs), which yields about 160 gallons (700- 800 bottles) of wine.

Once the GOliner is filled with grapes, the next step is adding nutrients and yeast. These are added through the front top inlet 2" Triclamp port.

Basic winemaking literature should be consulted for selecting suitable nutrients and yeast. Pasteur Red is a good all-around yeast for most reds. A typical yeast addition is about 1.0



grams per gallon. Yeasts must be hydrated with great care at the precise temperature specified by the manufacturer.

Acidity often requires adjustment. If wine pH is above 3.45 just after crushing, it should be corrected with tartaric acid. If grapes have soaked out 24 hours, the target pH is 3.60. A rule of thumb is to add 2.0 grams of tartaric acid per anticipated gallon of wine for each 0.1 drop in pH desired. If pH is below 3.45, don't worry about it at this point. Deacidification may be considered after fermentation.

The GOliner is a sterile container that permit control of the microbiological processes of fermentation. It prevents contamination of the *must* (crushed grapes) from microorganisms resident in the winery and cross-contamination from spoilage organisms from other batches where they may have taken hold. However, each lot of grapes carries with it a substantial and complex collection of mostly alcohol-intolerant wild yeasts and bacteria that sometimes create undesirable prior to the onset of fermentation by your inoculum of commercial yeast. It is conventional wisdom to suppress this activity by adding a small amount of sulfur dioxide at crushing. For sound grapes, use a teaspoon of potassium metabisulfite (KMBS) for each 200 pounds, sprinkled in slowly at the crusher to obtain good mixing. The GOfermentor will do the rest.

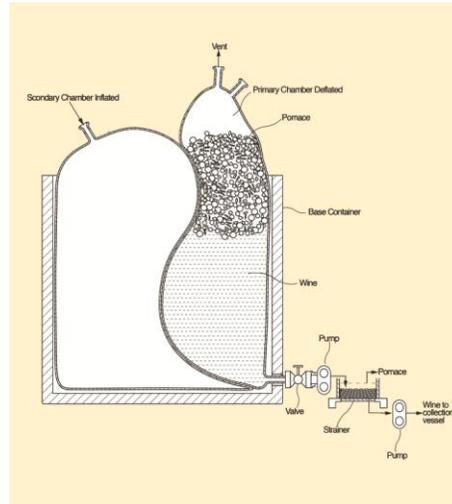
After additions, the exhaust vent is attached and in the inlet port closed. The fermentation will now proceed and the GOliner will inflate with CO₂. The punch schedule can be set and punches started after 24 to 48 hours. Samples should be taken to determine the end of fermentation (typically when all the sugar has been consumed). The easiest way to take samples is to use the GOtemp sampling tube option.

A red wine fermentation proceeds hotter than white wines (next section) and ideally peaks above 80°F for good extraction and color stability. While cooling is not essential for red wines, you may find, depending on the room's temperature and the grape load, that you are running too hot (more than 90 °F). To control temperature pre-install a GOcooler heat exchanger plate/control valve option. The GOtemp probe monitors fermentation temperature automatically regulates the coolant supply valve to maintain the desired temperature setpoint. The GOcooler plate is installed by placing it under the GOliner in the GOBase prior to filling. You need to provide a pressurized source of circulating chilled water or glycol.

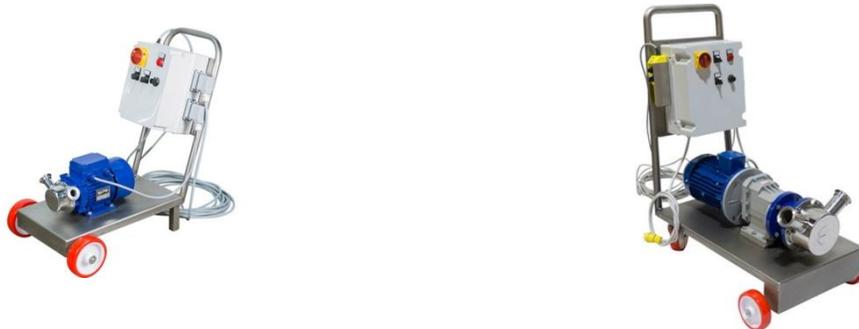
Pressing:

When the fermentation is complete the clean wine must be pressed out leaving the waste skins and seeds (*pomace*) behind. Traditionally pressing is done by transferring the fermented must to a dedicated press. These presses cost between \$ 3000 to \$ 20,000. In addition to the cost, they require tedious cleaning and maintenance. In contrast, The GOfermentor does NOT need any external press. Pressing is done in the GOliner itself, eliminating the cost of a press and required labor and washing.

To press from the GOfermentor you need to attach a 2-inch hose to the bottom discharge port of the GOfermentor and connect it to a suitable pump. This pump discharges onto a simple strainer assembly to trap any entrained seeds and skins and provides a small amount of aeration which is beneficial at this stage. Another wine pump then pumps the strained wine to the collection vessel. The collection vessel can be a tank, barrel, or best of all a SmartBarrel bag. The diagram below shows the setup.



To pump out of the GOfermentor you need a pump capable of handling some solids. It should be capable of variable speed and reverse. This pump is also useful for general winery operations. Typical pumps are:



If a suitable pump is not available, you can consider a gravity-fed system. Some wineries are built on hillsides to accommodate this type of transfer, and you can take advantage of this strategy by filling your GOfermentor on an elevated platform or another GObase. Otherwise, forklift the GObase containing the fermented *must* 3-6 ft above the strainer, perhaps positioning it on a ledge. Position the strainer below the GObase and gravity-feed the pressed *must* onto the strainer. Pump the strained wine to a collection vessel using an inexpensive wine pump that need not handle solids.



Gravity feed

You can make your own strainer or use a petit pump-over cart:



Pump-over cart about \$1200 from GWKent.com

A simple single-speed wine transfer pump is also useful for general winery operations. A typical example is:



Disposal:

The easiest way to get the waste pomace-filled liner out of the GObase is to twist the top of the liner and tie a lifting strap. Then use a winch or forklift to lift it out. You can dispose the *pomace* in compost heap, or spread it into the vineyard as fertilizer. The empty liner can be disposed in household garbage. It is not UV stabilized and will rapidly disintegrate in a landfill.

Racking:

After pressing, the red wine is allowed to settle leftover yeast to a sediment. A secondary malolactic bacterial fermentation may occur within weeks or months. This is considered desirable to soften acidity and prevent its spontaneous occurrence later in the bottle. Malolactic may be encouraged by inoculation with commercial bacteria and holding the wine at 70°F. The onset and completion of ML can be tracked using an inexpensive paper chromatography kit available from any winemaking supply store or from Enartis for \$185.

After malolactic completion, the clarified wine is transferred to another vessel. With the SmartBarrel, this is very easy. Simply attach a hose to the fill/discharge port on the SmartBarrel diptube fitting attached to the bag containing the pressed wine and using a small wine pump transfer it to another SmartBarrel equipped bag. The SmartBarrel diptube will drop as the bag is pumped out ensuring that the upper layer of clear wine is transferred first. Stop the transfer when you see cloudy material and discard the first bag with the sediments. No cleaning!

Conventionally, sulfur dioxide is added to the receiving vessel at the first post-ML racking to prevent oxidation and control microbiology. The initial addition of one teaspoon (4.5 gm) KMBS per 10 gallons should result in 25-30 ppm free SO₂. This can be measured with a Vinmetrica SC-300 assembly (\$500 from More Wine) which also measures pH and TA.

The racking procedure is repeated 2 or 3 times until the wine is clear and stable. Each racking can be a month or longer. Wood products, such as chips or staves can be added to a racking bag to add oaky flavors if desired. Free SO₂ should be maintained at 25-35 ppm.

For the adventurous, good results have been obtained with GOfermentor technology without any sulfur dioxide additions. The system's design minimizes contamination, thus greatly reducing the risk of this strategy.

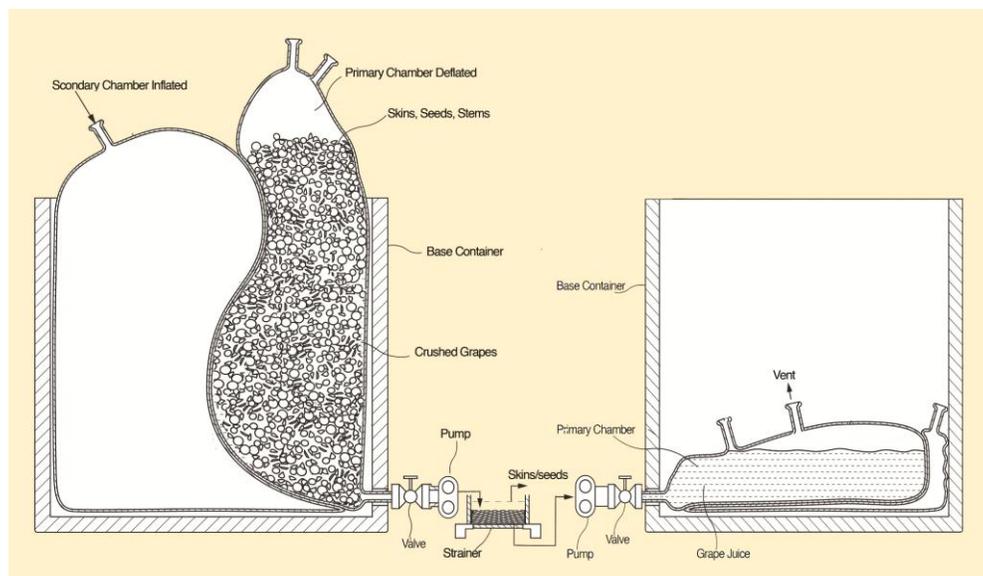
Finally, the wine is ready for blending, bottling, or long-term storage in barrels or SmartBarrels. Cheers!

White Wine:

Filling:

White wine is made without contact with skins. It can be made using juice from crushed fresh grapes or from juice/concentrates.

1. Using fresh grapes: Grapes need to be pressed before fermentation. An external press can be used and then the juice handled as described next. Grapes can also be crushed in a GOfermentor using its built-in pressing capability. This results in a more aromatic wine as the juice is not exposed to air, but yields are lower. In this method, destemmed grapes are put into the GOfermentor liner as described in the section on red wine making. The bottom discharge port of this liner is connected to the inlet on a second GOfermentor liner. The juice is pressed out exactly as described in the PRESSING section for red wine. The first GOfermentor liner containing the spent grape skin and seeds is discarded. The second GOfermentor contains the juice and this is fermented as described in the next section.



2. Using juice/concentrate: Working with juice/concentrate is much easier. Use a wine pump to pump into the top inlet port on the GOfermentor liner. Maximum juice fill volume is 250 gallon (950 liters).

Fermentation:

Since there are no skins and seeds in white wine production, there is no cap to manage. The automatic punch feature is not necessary but it is very useful to program a gentle punch every day or so. This action stirs up the yeast that settles to the bottom and also provides a more uniform temperature.

With white wine it is desirable to keep the fermentation cool (50 to 65°F). This will require the purchase of the GOcooler heat exchanger plate/control valve option. This uses the GOtemp probe to monitor the temperature of the fermentation and automatically regulate the cooling valve at the desired temperature setpoint. It is easily installed by placing it under the liner in the GOBase. You need to provide a source of circulating chilled water or glycol.

Racking:

There is no pressing after white wine fermentation. When the fermentation is complete the wine is pumped using a simple wine pump or gravity fed to another vessel. Here, the wine is allowed to settle. Left-over yeast will sediment, and secondary ML fermentation may occur unless sulfur dioxide is added directly after fermentation to suppress it. Except for chardonnay styles, malolactic is considered undesirable for most white wines and rosés.

After a few weeks, the clarified wine is transferred to another vessel. With the SmartBarrel, this is very easy. Simply attach a hose to the fill/discharge port on the SmartBarrel diptube fitting attached to the bag containing the pressed wine and using a small wine pump or gravity feed transfer it to another SmartBarrel equipped bag. The SmartBarrel diptube will drop as the bag is pumped out ensuring that the upper layer of clear wine is transferred first. Stop the transfer when you see cloudy material and discard the first bag with the sediments. No cleaning!

This racking procedure is repeated 2 or 3 times until the wine is clear and stable. Each racking can be a month or longer. Wood products, such as chips or staves can be added to a racking bag to add oaky flavors if desired.

Finally, the wine is ready for blending, bottling, or long-term storage in barrels or SmartBarrels. Cheers!

GOFERMENTOR

Performance:

Capacity: Grapes: min 200 Kg (440 lbs) - max 900 Kg (2000 lbs)
Juice: max 950 liter(250 gallon)

Physical space and power:

The GOBase outer container determines the floor space and height. The fermentation bag is placed inside the GObase container. The GObase container has a pallet base and can be moved by pallet jack or fork lift. The GOfermentor control panel mounts to the GObase. One controller is required per base.

Electrical power: 110 VAC (10A). 220 VAC optional.
Floor space: 48" x 48" by 60 inches height. Minimum doorway width 46"
Weight : 90 Kg (200 lbs) empty; 1100 Kg (2500 lbs) operating max weight

Required Equipment:

The GOfermentor equipment can be purchased from www.GOf fermentor.com.

1. GOfermentor PRO or NET – includes all electronics, hoses, and necessary accessories
2. GObase outer container with pallet base.

GOfermentor NET versus PRO features

Feature	NET	PRO
On-demand punch control	✓	✓
Pressing operation	✓	✓
Temperature monitoring	✓	✓
Scheduled punch control	✓	✓
Temperature control (requires optional GOCOOLER)	✓	✓
Internet connection	REQUIRED	OPTIONAL
Color graphics touchpanel standalone operation		✓
Trend logging and display	Via smartphone	✓
Event and alarm logging	Via smartphone	✓
Wired Ethernet access		✓
WiFi	✓	
Smartphone app	✓	

In general, you need the PRO version if you do not have WiFi internet access.

Optional Equipment:

1. GOfemp Sampling/Temperature probe. Includes hand sampler. Highly recommended.
2. GOcooler heat exchanger plate with control valve. This is needed if you are making white wine or need to control a hot fermentation. You need to provide cooling water or glycol to the control valve (1/2"NPT process connections). The GOcooler requires the purchase of the GOfemp sampling/temperature probe.

The GOf fermentor is the most economical option for a small winery. The basic equipment is just \$ 1700 per unit and requires minimal infrastructure. Operating cost is just \$ 100/run for the single-use GOf liner fermentation bag.

Cost:

GOf fermentor NET	\$ 1200 (PRO is \$ 1700)
GObase outer container (REQUIRED)	\$ 500
GOfemp sampling/temperature probe	\$ 500
GOcooler cooling plate w/valve	\$ 600
SmartBarrel diptubes	\$ 100
--- consumables ----	
GOf liner fermentation bag	\$ 300/set of 3 (\$100 each)
SmartBarrel liners	\$ 25 - \$ 50 each

Ancillary Equipment:

The other equipment you need for your winery depends on what you already have and what you are willing to spend. Here is a basic list and budget prices. These items are available from a number of web-based suppliers.

1. Destemmer w/built-in pump \$ 2000
2. Must pump \$ 2000 – 4000 (not essential but good to have)
3. Wine pump (variable speed) \$ 2000
4. Wine transfer pump \$ 160 - \$ 900
5. Strainer \$ 1200 (can make your own for much less)
6. Chiller \$ 1000 - \$ 5000
7. Totes, barrels, bins for racking variable
8. Bottling equipment variable
9. Essential lab gear \$ 2000

Support:

Have no doubts. We have perfected this unique system over four years and have several patents. We have made many award-winning wines, as have our customers. Please check our website for technical reports, research trials, and customer case studies.

Contact us if you have questions or just want to learn more. We will help you with your setup and train you to run everything. It does not take more than 1-2 hours. Equipment carries 12 month warranty. Made in USA.

Sales: sales@GOfermentor.com

Technical: tech@GOfermentor.com

Website: www.GOfermentor.com

Telephone: (USA) 908 877 5359

Become an expert:

Learn about winemaking and become an expert. Some publications you should read:

1. Jackson, Ronald S. Wine Science, Third Edition: Principles and Applications. Elsevier, Inc. 2008.
2. Dharmadikari, Murli. Micro vinification: A practical guide to small scale wine production. Midwest Viticulture and Enology Center, Dept. of Fruit Science, Southwest Missouri State University, 2001
3. Peynaud, Emile. Knowing and Making Wine. Translated from the French by Alan Spencer. J. Wiley, New York, 1984.
4. Zoecklein, Bruce W., Kenneth C. Fugelsang, Barry H. Gump and Fred S. Nury. Wine Analysis and Production. Chapman and Hall, New York, 1995.

<https://morewinemaking.com/content/winemanuals>

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