

WINES & VINES

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Tips on Buying Packaging Equipment

One of the biggest decisions a winery can make occurs at the time when a switch is made from simple hand machines to automatic ones for bottling, corking, capsuling, labeling and casing. Capital and limited time are the two main factors in making the decision. In general, hand machines predominate in wineries producing less than 10,000 gallons and some kind of automatic line is used when production exceeds 20,000 gallons. The decision to purchase an automatic bottling line usually occurs around 15,000 gallons and is often made on the basis of saving time spent on labor rather than the cost of the line.

Bottle Cleaning and Sparging

Blowing and rinsing are the two methods of bottle cleaning. Blowing is less popular in the East than in the West because higher humidity and long glass storage time make it difficult to maintain sterile conditions until the filling operation starts. Hand spargers built locally are often used by smaller wineries bottling less than 25 bottles per minute. In choosing a blower, the bottle should either be inverted when being blown or there should be a system for suction removal of air and particles.

Sterile water can be used for rinsing as long as the glass is sterile. If it is not, a recirculating pump enables reuse of a solution of 20,000 ppm of SO₂. Rinsers should be made entirely of stainless steel and must be large enough to allow time for the rinse material to spray into the bottle and to drain out again. Some rinsers come with a calibration chart that can be used to determine rinser performance through the correct sizing of the machines. A rinser will always have more spouts than the filler it precedes.

Filling and Corking

Straight gravity is the simplest and best system for filling. Low depression is used only for hard-to-fill wines (such as those that are high in residual sugar). Vacuum filling is becoming obsolete because of the greater oxidation of the wine and the difficulty in maintaining sterile filling. The small winery usually starts out with a simple bench top manual gravity filler with four to eight spouts. These can fill up to 800 bottles an hour and have no parts to break or wear out. Their disadvantage is that they cannot be supplied from a pressurized filter system and are therefore not adaptable to true sterile filling. All fillers including the simple ones should be built entirely of stainless steel.

Wineries producing more than 20,000 gallons have a number of good automatic filler-corker monoblock options available to them. The following features should be looked for when considering the purchase of any monoblock filler-corker:

- All stainless steel construction (including the frame under the skin) for permanence and sanitation.
- Capability for "clean in place" (C.I.P.) by means of steam.
- Safety system to shut off drive instantly in case of bottle jam.
- Bottom filling of filler bowl to reduce wine aeration.
- Automatic flow control of wine into filler bowl.
- Spouts that can be disassembled for cleaning without tools in seconds.
- Removable cork jaws that can be quickly cleaned and sanitized.

Capsuling

There are three types of capsules currently available: tin, poly laminate, and PVC (or PET) heat shrink capsules. Before tin/lead capsules were banned, approximately 350,000,000 were used each year. One supplier estimates that now 180,000,000 tin capsules and 150,000,000 poly laminated capsules are used each year, with the balance being heat shrink capsules. One of the major differences in capsules is their cost. Tin capsules cost approximately \$65 per 1,000, poly laminates \$45 per 1,000, and heat shrink capsules \$25 per 1,000.

Tin capsules, the only one-piece metallic capsule, can be put on the bottle in exactly the same way as the old tin/lead capsules. The price for tin capsules has come down substantially since they were first introduced and the price is now at the level where tin/lead capsules used to be. Tin capsules are often used on premium or reserve wines and can be silk screened, decorated and painted. They are completely recyclable and pose no problems from a toxicity standpoint.

Poly laminate capsules are made by laminating polyethylene with aluminum to create a two-piece capsule with a seam on the side and a separate top disk. They can be printed, embossed or painted and can be applied with the same spinning equipment as tin capsules. In order to apply the poly laminated capsules without wrinkles requires a very close fit of the unspun capsule to the bottle. Wineries will have to work carefully with their supplier to assure that the capsules they order are correctly sized for the outside diameter of the necks of the bottles they are applied to. The poly laminate capsules are not easily recyclable, as the plastic must be separated from the aluminum, a task which is often not worth the effort economically.

Heat shrink capsules require a heat tunnel or an adaptation of other equipment to include a heat chamber in order to apply the capsules to the wine bottles. One disadvantage of these capsules is that they can be difficult for the consumer to remove from the bottle. Some capsules are made with perforations or pull tabs to overcome this problem. PET heat shrink capsules in some colors such as gold can be hard to shrink down evenly.

Most small wineries start out with a semi-automatic oven if they are using heat shrink capsules. On automatic lines a simple radiant heat tunnel is used. On faster lines special tunnels are available that use specifically directed narrow jets of hot air to shrink the capsule. Small motorized hand spinners used on metal foil capsules can also be mounted on automatic machines. A single head foil spinner is good up to 1,500 bottles per hour. Above that speed, multiple heads on the spinner are required to prevent wrinkling of the foil.

A popular combination today is to mount an automatic distributor station and capsule application station on a pressure sensitive labeling machine. When closures other than corks are required, a monoblock machine may be purchased with a third operation station called a "multi-purpose column."

The place of carbonated products should be studied in a winery's future. Products like sparkling wines, carbonated non-alcoholic juices and ciders are increasing in popularity and can be a major profit center. Counter-pressure fillers for bottling these products are much more complex and expensive machines. However, they can do a superior job on still wines as well as giving the winery a new source of profit.

Labeling

Labeling by hand is practical for wineries producing less than 5,000 gallons a year. Wineries estimate that hand labeling costs between 50 cents and \$1.00 a case, a figure which includes the extra cost incurred because hand labeling does not take place at the same time as bottling. The decision on

whether to buy a labeling machine begins with a consideration of the value of the people who are doing the labeling. If enough can be saved on labor to buy a machine in two years, the machine will be more cost effective.

Once the decision has been made to automate labeling, the label design becomes an important consideration. Today 90% of the machines sold to wineries are pressure sensitive labelers. Almost all of these are for the application of both a front and back label. At under 50 bottles per minute, the cost of the pressure sensitive machine is far less than the traditional wet glue labeler. There is no limit on the size or shape of the label used. The major advantages of pressure sensitive labeling are the simplicity of operation of the machines, the lack of messy glue and clean up, and the fact that there is no changing of parts required for different label sizes.

A small winery can start out with something as simple as a label glue applicator for a few hundred dollars. A bench top semi-automatic pressure sensitive labeling machine for doing a front and back label can be purchased for under \$5,000. Wineries larger than 20,000 gallons are likely to want machines with a speed of 2,000 to 3,000 bottles an hour. A packaging line is a major investment that a winery will have to live with for a long time. Careful investigation and looking before you buy are most important.