



Hunt Country Vineyards Installs Geothermal Heating and Cooling by Art Hunt

In October 2012, Hunt Country Vineyards converted all four of its winery buildings* to heating and cooling using **geothermal** energy.

Geothermal heating or cooling utilizes the latent heat of the earth beneath our feet. The normal temperature of the soil several feet below the surface is always about 55 degrees F. By running a loop of pipes through this constant temperature layer we can either warm cold water to 55 degrees or cool warm water to 55 degrees. A compressor called a **heat pump** can either heat a building by taking heat from the earth loop and putting it into the building, or, conversely, cool the building by taking heat from the building and putting it into the earth loop underground.

The heat pump works by the same principles as a refrigerator or air conditioner, but because of the earth loop, is more efficient. In a heat pump, a **compressor** compresses a refrigerant gas and this creates heat. The heated refrigerant then passed through a **condenser** which takes away the heat as the gas becomes a liquid again, but under high pressure. The heat produced in this stage can be used to heat water or buildings, or wine tanks. If we are trying to cool a building or a wine tank, we can dissipate this heat by pumping the hot refrigerant through a heat exchanger and the resulting hot water through the earth loop. The water returning from the earth loop is now cool and when the now cool liquid refrigerant is forced through a small orifice in an **evaporator**, it expands and further cools the surrounding area, thus providing cooling for a building or tank. This process is reversed to heat a building. In this case, heat from the condenser is used to heat the building and the resultant very cool water from the evaporator is passed through the earth loop to warm it to 55 degree temperature again.

At Hunt Country, we have eight wells, each 375 feet deep, which are being connected together to form one large earth loop. Each building will have a heat pump to either heat or cool that building as conditions dictate, using the capacity of the entire earth loop.

By using heat pumps we will be eliminating burning of fuel oil and propane. This geothermal process is about 400% more efficient than using fossil fuels to heat or cool our buildings. This is because we are simply moving heat from one place to another, rather than burning fossil fuels to accomplish the same purpose.

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* Winery, Barn (big warehouse/bottling room), Little Warehouse, Tasting Room