

# Sky Acres Winery

A “Lazy” Inventor’s Vision May Be the Future of Wine

By C.G. Wolfe

Photos Courtesy of Sky Acres



The tranquil, monophonic intones of Gregorian chants washed over the blushing Petite Syrahs and Cabernet Francs at Sky Acres Winery in Bedminster. Winding down the long drive of the property’s anonymous entrance in Somerset County’s “horse country,” the only hint that you are approaching a winery, is a neatly arrayed, three-acre vineyard of sprouting shoots and twisting tendrils. At Sky Acres, there are no tanks, traditional presses, cooperages, wastewater treatment facilities, or other machinery and outbuildings typically associated with commercial wine production. Utilizing an innovative, sustainable, and forward-thinking new process of winemaking, vintners Meera and Vijay Singh, have compressed their entire winery into the spotless stalls of an immaculately converted, pre-existing horse stable, abutted by woods, rolling green fields, and a tidy chicken coop, creating a “zero footprint winery.”

Vijay Singh describes himself as a “lazy” person, an odd claim for a world-recognized biotech scientist who holds more than 20 patents, has published hundreds of papers, and who revolutionized the production of biopharmaceuticals in the late 1990s, with the Wave Bioreactor, a low cost, labor-saving, innovation in cell cultivation that is used in nearly every

biotech/pharmaceutical manufacturing company today. Simply put, the process replaced stainless steel tanks, which had to be cleaned, prepared, sterilized and maintained after each usage, with a disposable, cultivation bag. Initially developed at Schering-Plough, Vijay was granted ownership of his patent and began marketing his new invention. After three years of working 14-hour days, his company took off, eventually employing over 150 people in offices the US, Japan, and Europe.

"My son was ten and he hardly ever saw me," he recalled. "So I said 'that's it.' We got a good offer from GE, sold it and quit. Meera quit her job too and we just decided to do our own thing."

With time and some extra land on their hands, Meera and Vijay took the advice of a friend and planted a small vineyard on their property, but Vijay soon discovered that making wine was almost as labor-intensive as growing cells the old-fashioned way.

"I was appalled," he said. "It's the same thing! You use these big tanks that you have to wash, and then you have to take the stuff out of the tanks, and clean them again."

He also discovered another tedious chore that would have to be tackled several times a day if he wanted to produce red wine, something wine makers call "cap management." The color in red wine, as well as most of the flavor and tannins, comes from the skins of the grape. The problem is that the carbon dioxide from fermentation continuously sends the soaking skins floating to the top of the tank, creating a "cap." If they aren't soaking, the skins will no longer produce color and flavor, and if left there to harden the cap can produce heat that starts killing yeast and, as Vijay puts it, "all kinds of weird things" and "funky aromas" can happen.

Traditionally, winery workers would tackle this job with their feet by stomping down the cap (think, *I Love Lucy*, season



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*The GOfermentor at Sky Acres*

5, episode 23: “Lucy’s Italian Movie”). Today, there are essentially two ways to deal with cap management without getting your toes dirty; the “pump over,” the most common method used in large commercial wineries, which pumps the wine from the bottom of the tank and sprays it over the cap; and the “punch down,” a method employed by smaller wineries, where someone has to climb to the top of the tank and physically push the skins back into the wine with an instrument resembling a giant potato masher (a perilous task which Vijay claims takes the lives of five cellar workers a year, who plunge to their deaths after succumbing to the Co2 fumes created during fermentation that gather under the cap). Both methods have their drawbacks and neither appealed to Meera and Vijay.

“I said, ‘I can’t do this, there’s only two of us!’” Vijay exclaimed.

If necessity is the mother of invention, then laziness must be its stepmom. Vijay



*The converted stables at Sky Acres Winery*



set out to think his way out of their laborious, winemaking dilemma and soon found the solution in an old friend - the disposable, biodegradable bag. Using an invention based on his cell growing days, Vijay created the GOfermentor, an all-in-one, crusher, fermentor, and press - no washing, no cleaning, cap management is automatic, and it can be set up and taken down in minutes, all at the cost of around \$2,000 - an ideal solution for small winery operations and even experimental runs at larger wineries.

The GOfermentor uses two flexible liners in a rigid outer support container. The primary chamber holds the grapes. The secondary chamber inflates and crushes the fruit, creating "must," the juice that contains the skins, seeds, and stems of the fruit that is being fermented. The inflating and deflating secondary chamber then acts as an integral punch system, wetting and breaking up the cap, which really has no chance to form, a process that



Part of the vineyard at Sky Acres Winery

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can be done manually or programmed to run automatically, and as many times as necessary.

At the end of fermentation, the wine has to be separated from the spent skins and seeds or “pomace.” Most wineries pump the contents of their fermentor to a wine press for separation but with the GOfermentor the secondary chamber simply inflates and gently forces the wine in the primary chamber through a strainer to be collected and aged.

Instead of aging their wines in wooden barrels, which are costly, require cleaning, and can only be used several times, (“I’m not going to clean them!” Vijay declared) the wines at Sky Acres are aged in, you guessed it, the GObarrel, a flexible, collapsible, metalized plastic liner (think of the bag in boxed wines) that minimizes oxidation and evaporation, and eliminates the need to “top-off,” another tedious task of the vintner’s trade. A variety of wooden barrel staves can be added for “oaking” and removed when desired, by transferring the wine to another liner. Because the entire process, from fermentation to pressing and aging, is a closed system, which is only used once and then discarded, Sky Acres can produce wines without any added sulfites, which is typically used as an anti-microbial and antioxidant. The wines are also clean and fresh, free of any off-tastes or odors.

Once fermentation is completed and the wine has been stored for aging, the pomace is taken to the vineyard and spread as an organic fertilizer and the biodegradable bag is discarded. Because there are no tanks or presses to be cleaned, Sky Acres uses 80% less water than traditional wine making methods, without the need for chemicals or detergents. Another innovation that Vijay adapted from Australia, eliminates the need for herbicides by killing weeds with super-heated steam (a chore he is currently teaching a robot to perform). And as if that wasn’t “green” enough, the entire winery is powered by solar panels.



Vijay (left) and Meera (right) Singh of Sky Acres Winery. The winery derives its name and logo from the Singh’s long time interest in aviation. Vijay and Meera are both pilots and can often be found at Somerset Airport in their Waco YMF biplane. Sky Acres is not open to the public but you can taste the wines made by the innovative, patented, GOfermentor and get a behind the scenes glimpse of winemaking process at their Open House on October 15, 2016. Two demonstrations and tours of the winery will be held at 3 p.m. and 5 p.m. For more information about their wines, including how to order some for yourself, and to register for the October Open House, visit [www.skyacreswinery.com](http://www.skyacreswinery.com).





While sustainability and minimal environmental impact was a goal from the outset, Meera, who is a level three sommelier, and Vijay's true objective is to produce great wines. To that end, Sky Acres is primarily a research winery, where Meera, the "chief-taster," blends and experiments with different varieties. (They're going to try a champagne this year and possibly a port.)

"The idea is to try to develop the technology, to try different aspects," said Vijay. "It's all about the quality. Everything else is secondary."

From the Finger Lakes and the California coast, to the ancient grape regions of Europe, Sky Acres' Garden State wines are wowing oenologists from nose to the finish. They have won side-by-side, blind taste tests nationally and internationally, including two awards at the prestigious San Francisco Chronicle wine contest, where they were the only New Jersey wine to go head-to-head with over 7,000 wines from Napa, Washington, and other established appellations. They also won best-of-class gold for their wine label series, which are designed by Meera, an artist, and former partner in her own graphic design firm in Manhattan. Wine growers who have tested the GOfermentor system at their own vineyards have also been blown away by the results.

"Everybody said the wine they made was better," said Vijay, "and what they said was interesting, they said the wine tasted like it was one year older...cleaner, softer, fruitier... It's quite gratifying."

As I swirled the petite syrah in my glass, the soft, clean bouquet rising with the hypnotic vocalizations of the monk's mantras, and finally raised the glass to my lips and took my first sip, it occurred to me that I may look back at this odd experience a few years from now and be able to say that I was in the horse stalls of a stable in Bedminster, with a "lazy" biotech scientist, and tasted the future of wine.

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