

Alpha Omega Winery Tests New "Alien" Grape Sorting Robot

by **Ted Rieger**

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Ultra-premium Napa Valley winery Alpha Omega, based in St. Helena, is the first U.S. winery to beta-test the new "Alien" optical grape sorting robot during the 2018 harvest, developed by CITF Group Inc. headquartered in France. A second Alien unit is being simultaneously tested this harvest in Bordeaux, France by Chateau Margaux. An Alien was also tested earlier this year during the 2018 southern hemisphere harvest in Australia.

The Alien is designed primarily to sort red grapes after destemming to remove material other than grapes (MOG) such as stems, leaves, green berries, etc., and the equipment can be programmed to remove lower quality/unwanted grape berries based on color and condition. Destemmed grapes are transferred by conveyor to the Alien unit where a camera and flash unit quickly takes images of up to 200 berries at a time. This "robotic vision" information is processed to guide movement of the robotic sorter arms.

The Alien uses "delta" robotic technology, commonly used in the food industry, with sorting arms that are commonly called "spiders." The Alien has two individually controlled spider arms that move in all directions at high speed to locate MOG based on information from each camera shot, and they remove up to 400 pieces per minute of MOG and unwanted berries using a vacuum suction tube. High quality berries come off the Alien conveyor belt into a hopper where they can be transferred or pumped directly to fermentation vessels by continuous flow. CITF has designed the Alien to sort at maximum capacity of 8 tons per hour.



*Alien optical grape sorting robot unit in operation at Alpha Omega winery
Photos by Ted Rieger*



Closeup of Alien sorting arms that move to remove MOG and inferior berries with vacuum suction

CITF has partnered with Schneider Electric that provides electronic components, and Black Swan Technology that provides control components and software. For more information on the Alien's development and robotic technology, see the article, "Time-tested Delta Robotics for Grape Sorting" in the [May 2018 Wine Business Monthly](#).

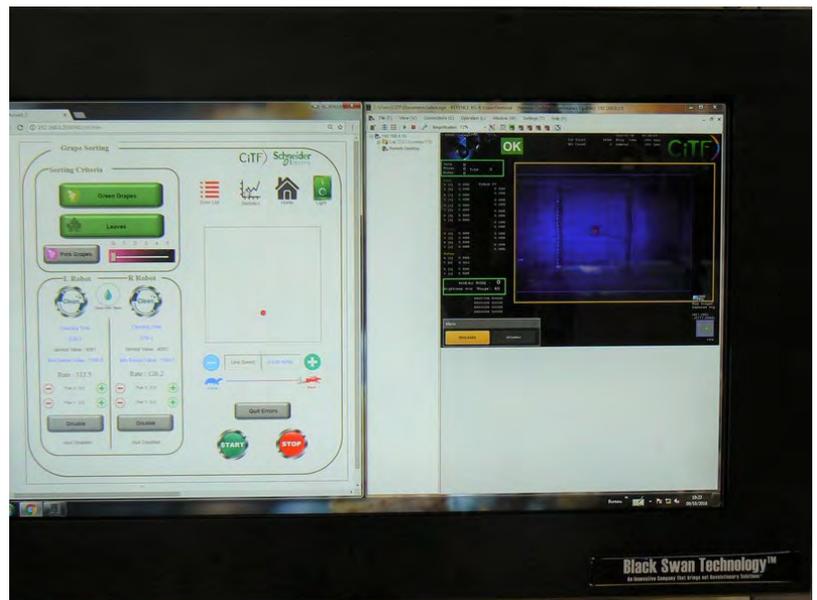
Alpha Omega winemaker Jean Hoefliger said CITF approached the winery because the company wanted to test the Alien at a "high-end" California winery with Napa grapes for the 2018 harvest. As of the second week of October, Alpha Omega had processed about 200 tons with the Alien, more than 40 percent of its total expected tonnage for 2018. Varieties sorted to date include: Cabernet Franc, Cabernet Sauvignon, Merlot, Petite Sirah, Petit Verdot, Syrah and Zinfandel. Alpha Omega produces about 15,000 cases/year under its own label and provides custom crush services for clients.

Hoefliger said the winery has run the Alien for as long as 10 hours straight in one day without any significant issues. Noting that he commonly receives requests to trial new equipment and products, Hoefliger said, "We don't have time to spare to trial equipment that requires too much work or doesn't perform properly. The reason the Alien is still here this far into harvest is because it's functioning to our expectations."

All the winery's grapes are hand-harvested. Grapes are first run through a Pellenc Selectiv' Process Winery M Destemmer at the crush pad. The winery traditionally used from four to six workers to hand sort after destemming "to ensure every berry fermented is the quality we want," Hoefliger said, and could process about 1 ton per hour. The winery more recently added a Pellenc Selectiv' Process Vision 2 optical grape sorter after destemming, but even with this sorting step, still used hand sorters to fine tune the final cut for fermentation. This increased processing capacity to 3 tons per hour.



Alpha Omega winemaker Jean Hoefliger inspects sorted berries coming off Alien sorter conveyor



Alien grape sorter touch screen control panel and camera monitor screen

For the 2018 harvest, the Pellenc sorter's shaker table is used to spread out and evenly space the grape berries to feed into the Alien, and the Alien has replaced all hand sorting operations while still processing about 3 tons per hour. As Hoefliger pointed out, human sorters are unable to function at the same level of precision and consistency as a good quality machine, because their eyes get tired and attention span declines after two to three hours watching moving objects. Hoefliger said, "The Alien has replaced our hand sorting, and provided more consistency and control to put a much better product into the fermentor." At the same time, the human sorters, who Hoefliger said are "knowledgeable, skilled and trained cellar workers," are now available to perform other important functions during the busy crush season for more efficient production and quality control.

The winery earlier this week processed one of its high-end lots of Howell Mountain Cabernet Sauvignon that was directly pumped from the Alien's hopper into oak barrels for fermentation. Alpha Omega director of communications Kelly Carter said the winery has the largest red wine barrel fermentation program in the U.S., and has 1,000 barrels dedicated for red fermentations. The winery uses 100 percent French oak with 80 percent new barrels.

Hoefliger said the Alien is quickly and effectively cleaned between each variety, or lot processed, using a five minute hot water cleaning cycle. A more detailed sanitation process cycle cleans the entire unit and conveyor belt at the end of each day.

Hoefliger said the 2018 harvest is potentially "the harvest of the century," at least for this century so far. A slow growing season has allowed grapes to ripen evenly, and without severe climatic changes such as heat spikes, or cold or wet weather, that can lead to rush conditions and the need to bring in high volumes of grapes in a short time. Under those conditions, a grape sorter such as Alien can be a valuable tool to increase process capacity. Although the Alien has not been tested under such extreme conditions this year, Hoefliger is happy with the Alien's performance in providing a higher level of quality and consistency than could be achieved using the winery's past hand-sorting methods. In addition, he noted that the control system has allowed fine-tuning adjustments, or "deep-tweaking" for each variety as it comes in over the course of the harvest season.

CITF employee Ronan Galland has been overseeing the Alien's operation at the winery and assists with programming the controls to meet the winery's sorting specifications for each grape variety and lot.

CITF Company Background

CITF, an acronym for Conception Industrielle & Technologies