

BJM PUMPS ENABLE A GREEN WINERY WASTEWATER TREATMENT SYSTEM

PUMP CASE STUDY

Woodbridge Winery

Acampo, CA

Wastewater Handling Pump

CUSTOMER APPLICATION AND KEY CHALLENGES

After the outstanding success of his Napa Valley winery, Robert Mondavi founded the Woodbridge Winery with a vision of creating delicious wines for everyday enjoyment. However, as the expanding market need increased, production also increased and so did the amount of wastewater generated by the plant operations.

Woodbridge Winery was faced with the challenge to meet the production waste stream demands, maintain optimum production at peak efficiency, and meet local and federal regulations, all while adhering to the high corporate environmental standards.

The winery wastewater contractor, along with an engineering firm, and hydraulic experts, designed an effective wastewater treatment process. A pump system would collect the maximum output of the plant into a wet well, move the effluent to an equalization tank, through a wastewater reactor, and finally, to aerobic holding ponds. The treated wastewater would be used to irrigate the vineyard, thus providing a "green wastewater process".



Woodbridge Winery produces red and white varieties for high volume global distribution

SOLUTION & INSTALLATION

The project specified three BJM Model SKX-150 submersible pumps installed in a triplex arrangement that operate in parallel. Choosing three pumps for the sump, instead of one or two larger pumps, increases reliability in the system while also efficiently covering a wide range of operating conditions. The triplex control allows simultaneous operation of one, two, or all three pumps, depending on the changing rate of inflow to the tank. The pumps alternate lead and lag positions to provide more continued use and wear more evenly.

The BJM Pumps provided by R.F. MacDonald Co. enabled a unique solution for handling the grape wastewater process:

- **Non-Clogging** - The SKX type pumps produce a shredding action caused by a cutting impeller with a Tungsten Carbide Tip against a suction plate. The suction plate has an irregular opening with engineered cutting slots to help grab debris and aid the impeller shredding action.
- **Volume and Lift** - The non-clog, single vane impellers are designed for high volume and lift performance, perfect for a wet well application.



The winery production waste water treatment system

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- **Wear Resistance** - All wear and "wet" parts exposed to the grape waste such as impeller, wear-plate, oil housing, pump-housing and inner pump top, are made of cast 316 stainless steel material.
- **Reliability** - Three Seal Motor Protection – The submersible motor is protected by double mechanical seals. Lower seals are made of silicon carbide/silicon carbide and the upper seal is made of carbon/ceramic. An additional lip seal is installed above the impeller to help prevent abrasives from entering into the seal chamber. Winding protection and NEMA Class F motor insulation allows the motor temperature to rise to 230°F, superior to pumps with Class A and B insulation. An automatic switch turns the pump motor off if the temperature and/or amp draw rises too high.

The BJM pumps have been working remarkably well since installation. The only maintenance required was a single seal replacement, which was easily replaced by switching to the back-up pump during the procedure.

PROJECT RESULTS

The final system was installed as designed and all wastewater flows to the wet well containing three BJM submersible pumps in a series; a lag pump, a lead pump, and a spare. They remain totally submerged for maximum cooling, even at the lowest liquid level.

Effluent flows from the wet well to the Equalization Tank and the reactor then into aerobic settling ponds. The wastewater is held there until required for irrigation. Based on content, the ponds are drained and dredged to remove any sludge build-up.



Left: Adam Shasky, R.F. MacDonald Co. Pump Business Sales Engineer
Right: Ben Wells, Western Regional Sales Manager, BJM Pumps