

Electrodialysis Offers Technical Assistance for Improved Water, Chemical, and Energy Utilization



Challenge

Winery seeks to minimize energy usage from cold stabilization of the wine.

Solution

NYSP2I evaluated different ED systems and worked with an expert to analyze differences in energy and water consumption between ED and cold stabilization.

Results

- Annual savings of approximately \$46,000 including over 96% reduction in energy costs
- Discounted payback period of 2.8 years and 3.1 years with no incentives.
- Water use would increase by an additional 8500 gal/year

Challenge

Glenora Wine Cellars in Dundee, NY, produces about 60,000 cases a year. Like most wineries, cold stabilization (cooling the wine in large tanks to below 30 degrees for weeks) removes tartrates from the wine. However, significant amounts of energy are used during the refrigeration process, amounting to over 100,000 kWh/year of electricity costing \$12,000/year.

Solution

New York State Pollution Prevention Institute (NYSP2I) performed detailed literature and equipment searches to evaluate the successful winery application of electrodialysis (ED). An onsite meeting at Glenora took place with an ED expert on winery applications to confirm details on operational expectations. Engineering analysis helped estimate differences in energy and water consumption between ED and cold stabilization. From there, a financial analysis template estimated payback on capital investment for an ED system.

Results

There is sufficient justification for Glenora to consider the implementation of electro dialysis as a replacement process for their current cold stabilization process. While ED has not yet been implemented in NY, the literature search indicates that successful installations exist in the western part of the U.S., Canada, Australia, and Europe. The most attractive option is to purchase a refurbished ED system rated at 400 gal/hour with a selling price of \$115,000.

- Annual savings of approximately \$46,000 include over 96% reduction in energy costs and less product loss compared to cold stabilization (0.5% loss for ED versus 3% loss for cold stabilization).
- Discounted payback period of 2.8 years (pending utility rebates from the local energy supplier) and 3.1 years with no incentives.
- Water use would increase by an additional 8500 gal/year since ED needs fresh water to separate the specific ions. However, the current onsite septic system has adequate capacity to handle other water flows; water use costs are also meager since well water is the primary source.

Partners



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