Technical Assistance for Improved Water, Chemical, and Energy Utilization – Crossflow Filtration at a Winery

Client
Located in the Finger Lakes Region in Dundee, NY, Glenora Wine Cellars produces about 60,000 cases/year of red, rose’ and white wines.

Opportunity Area
The current solids filtration process at Glenora includes the use of plate & frame filters that require filter pads and diatomaceous earth (DE). Based on information provided by Glenora, annual operating costs for the current filtration process is approximately $73,000 (including a 3% product loss factor). Use of the diatomaceous earth also poses an inhalation risk for workers.

Objectives
Determine whether cross flow filtration is a viable alternative to the current DE filtration process in terms of reduced environmental and health impacts as well as increased economic competitiveness.

Work Performed
NYSP2I performed a detailed equipment search to determine which cross-flow filtration systems are currently commercially available. NYSP2I then evaluated several of these commercially available cross-flow filtration systems that would meet the capacity requirements at Glenora. Engineering analysis was performed to look for significant differences among the various systems and, finally, a financial analysis template was created to estimate payback on capital investment for the different commercial systems.

Results
There is sufficient justification for Glenora to consider implementation of cross-flow filtration as a replacement process for their current solids filtration process:

- Annual savings of approximately $60,000
- Discounted payback periods from 1.5 to 2.3 years for three different systems
- Elimination of the use of diatomaceous earth and the potential risks associated with handling this powder material in the workplace

1http://www.cdc.gov/niosh/docs/81-123/pdfs/0552.pdf