Energy Savings at a Craft Brewery

Client
Abandon Brewing Company is a start-up craft brewery located in Penn Yan, New York. At the time this project was conducted, the owners were operating a small-scale electric brewery in an adjacent farmhouse and were working to convert a large barn on the property into an operating brewpub.

Opportunity Area
Because the brewpub was still under construction, there was an opportunity to incorporate energy-saving measures into processes as the production line was being designed. The owners of Abandon Brewing were also interested in using renewable energy sources to reduce cost and to help the brewery to distinguish itself as a sustainable operation.

Objectives
The primary objective of the project was to develop strategies to reduce energy use and/or utilize renewable energy sources that would result in direct cost savings for Abandon Brewing.

Work Performed
NYSP2I measured energy use in the small scale brewery over a period of two brew cycles. In order to estimate energy use in the full-scale production facility, measured data was scaled up using equipment specifications and mathematical models. Based on this scaled up profile of energy demand and knowledge of the brewing process, recommendations regarding energy recovery, more efficient practices, and/or the use of renewable energy sources were developed.

Results
The analysis conducted provided a basis for three primary recommendations that could be immediately integrated into the design of the production brewery: (1) to insulate the Heating Lautering Tun (HLT) and kettle, (2) to recover heat from both the kettle effluent and the hot rinse water used for sterilization, and (3) to consider solar thermal water heating to reduce electricity use and, therefore, operational costs. If implemented together, these recommendations could save Abandon Brewery $4,000-$5,900 annually with an estimated payback period of less than 4 years and result in a 60% reduction in the use of electric energy. Specifically, the use of a solar thermal water heating system would result in an annual savings of $3,319 with a payback period of 3.9 years.