East Campus Power Plant Deaerator Optimization

Overview
In the East Campus Power plant a new Deaerator system has been installed along with the old Deaerator system. The goal of our project is to analyze these Deaerators to determine which Deaerator is the most efficient and then make a recommendation to the plant of which one should be the primary Deaerator system that is run most often. To successfully complete this project we needed to determine how to define the efficiency of a Deaerator using the data that was available to us.

Objectives
Our objective was to define a method of calculating the efficiency of the deaerators at the east campus steam plant so that we could determine which Deaerator was the most efficient. We determined that the efficiency of the deaerators would be based steam usage data and chemical usage data of the deaerators.

Approach
- Understand the inner-workings and operations of the power plant and the Deaerator system.
- Visit the plant and see it in operation to gain an understanding of it.
- Determine what parameters of the Deaerator and systems surrounding it can be measured.
- Define the efficiency of a Deaerator based on the measurable quantities from the power plant.
- Contact the manufacturers of the deaerators to discuss the methods of determining efficiency.
- Collect the data from the power plant.
- Calculate the efficiency based on the steam usage and chemical usage data.
- Analyzed results and made a recommendation based on those results.

Outcomes
- The new Deaerator is more efficient than the old Deaerator
- The new Deaerator requires less chemicals to remove excess oxygen
- The control system to both Deaerators does not provide the correct amount of steam
- These control systems must be investigated to resolve this problem
- Further analysis must be done to determine the operational cost of the deaerators based on the steam and chemicals used