Cooling Water Recirculation System Evaluation And Improvement

Overview
PMG PA came to the team with a capacity and reliability issue regarding their water recirculation system. This system cools their sintering furnaces for their production process. This system, installed in 2004, is being questioned on its effectiveness when production is increased in the future. PMG is looking to add a fourth furnace and needs to evaluate the capacity of the water recirculation system and its components.

Objectives
The team’s main objectives were to analyze the current system and to make recommendations including; short term fixes, long term fixes, and economic analysis of new and improved systems.

Approach
- The team starting the project by evaluating the needs that were given to them by PMG PA.
- This continued into a project plan that broke the semester down into three different phases.
- Phase I of the project consisted of the team completing a current analysis of the entire system including any issues that were seen.
- Phase II of the project consisted of redefining the variables of the inputs and outputs of the current system along with predicting the system capabilities given a production schedule.
- Phase II also included an Excel spreadsheet simulation that PMG PA will be able to use to see the system capabilities given production levels.
- Phase III of the project included final recommendations that were given to PMG PA on what system should be implemented.
- This included a budget sheet along with an implementation timeline for the different parts they would need for their system.
- A maintenance schedule was also created for PMG PA to better maintain their system in the future.
- The team also completed a Return on Investment Statement to show PMG PA where their best savings would be.

Outcomes
By completing the recommended changes the team has set for PMG they should see the following improvements:
- An increase in chemicals will decrease in water usage per month by 33.5%
- This decrease in water usage will save PMG PA $418.00 per month.
- The improved system will also decrease the risk for failure by 81.7%.