Project Overview

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Summer Activities

During this summer, I participated in the assessment visit of 5 facilities as an analyst student. In addition, in some of the assessments I served as the equipment and safety coordinator in the assessment team. In addition to the assessment visits, I went on a two-day research trip to McCook to collaborate with a UNL's graduate student in a fermenter's emissions data collection in an ethanol plant.

Recommendations Description

During these visits, I worked on preparation of 9 ARs which are: finding and reduce the air leaks and the management of the air compression system, covering the final clarifiers to prevent algae growth, programing the UV system based on the water flow rate and adding circulation pumps on the north aeration digestion basins to prevent freezing, insulation of ammonia lines on the rooftop, installation of a deduct meter on the cooling tower, insulation of ovens, solid waste recovery.

Pollution Prevention Benefits

All nine recommendations can result in improvements in energy efficiency of the assessed facilities which will eventually have positive influences on pollution prevention by reducing the overall energy consumption and the produced emissions from the processes, like GHG emissions. The amount of pollution prevention benefits of the ARs are shown in Table 1.

Results

The table below summarizes the pollution prevention benefits:

Table 1: Summary of Pollution Prevention Benefits

AR	Annual Energy Savings (kWh/year)	Annual Cost Savings ($/year)	GHG Emission Reduction ($MTCO_2E$/year)
Reduce Compressed Air Leaks	105,792	$5,819/year	75
Compressed Air Management Plan	106,911	$7,748/year	75.8
Install Final Clarifier Covers to Prevent Algae Growth	-	$800/year	-
Program UV Lights to Dose Based on Flow	13,748	$970/year	9.7
Prevent Freezing in North Aeration Basins using Circulation Pumps	160,151	$8,182/year	113
Utilize Deduct Meter on Cooling Tower	-	$4,237/year	-
Repair the Insulation of Ammonia Pipes	85,938	$3,479/year	60.9
Insulation of Ovens and Chimneys	564,079	$37,461/year	400
Solid Waste from Reusable Containers	TBD	TBD	TBD
Total	**1,036,619**	**$68,696/year**	**734.4**