Project Overview

Nebraska Industrial Assessment Center Intern: Elise Gamble

Major: Biological Systems Engineering **Emphasis:** Environment & Water Treatment

Throughout the course of the summer, I completed 4 assessments for the University of Nebraska-Lincoln's Industrial Assessment Center (NIAC). These trips were to Nebraska Plastics in Cozad, NE; Collins Aerospace in York, NE; ASC Capacitors in Ogallala, NE; and the Yankton Wastewater Treatment Plant in Yankton, SD. I served as safety coordinator, equipment manager, analyst, and lead on these assessments respectively.

Assessments of these plant identified 4 assessment recommendations (ARs) that could be implemented to reduce overall operating costs. Of these, 3 are included in completed reports. Table 1-1 shows these 3 assessment recommendations (ARs) with the potential savings, capital investment, and simple payback associated with each AR listed. A summary of each AR is presented on the next page describing the general observations that were made and the basis of these recommendations. The following recommendations are listed in no particular order. (Not quantified below are the other measures I researched which were included in the assessment reports for a few facilities but not included as official recommendations for various reasons.)

Table 1-1: Overall Summary of Assessment Recommendations

Assessment Recommendation (AR)	Annual Savings		Capital Investment ($)	Simple Payback (years)
	Resource (unit/year)	Dollars ($/year)		
AR No. 1: Replace Forced Air Unit Heaters with Radiant Heating	746 MMBtu	$4,782/year	$13,500	2.8
AR No. 2: Reduce Air Leaks in the Distribution Center	105,417 kWh	$3,510/year	$2,500	0.7
AR No. 3: Reduce Air Leaks in the Distribution Center	41,064 kWh	$540/year	$500	0.9
Total Sum*		**$8,832/year**	**$16,500**	**4.4**

*The overall payback was calculated based on the total sum of all capital investments divided by the total sum of dollar savings from all the recommendations

I also worked on case studies, organizing and cataloging the work of P3 student interns from the summer of 2020. These case studies were impacted by the COVID-19 pandemic and slightly different than former years. Rather than one intern assigned per facility, I evaluated 6 students assigned to 4 facilities. This individual project is crucial for grantees like the University of Nebraska-Lincoln when it comes to reporting implementation of their assessment recommendations and overall impact of the program.

Assessment Recommendation Description:

AR No. 1: Replace Forced Air Unit Heaters with Radiant Heating

It is recommended that radiant heaters be installed as a replacement to forced air unit heaters. The radiant heaters will increase the efficiency of area heating, leading to increased employee comfort during the winter months and decreased energy usage and costs. The annual cost savings were found by comparing the current forced air unit heaters to radiant tube heating. Doing so will result in annual cost savings of **$4,782/year**. The cost to implement is **$13,500**, which yields a payback period of **2.8 years.**

AR No. 2: Reduce Air Leaks in the Distribution Center

It is recommended that the facility implements a program to identify and repair compressed air leaks on a regular basis. IAC members found and measured compressed air leaks which, if repaired, can reduce losses by **$3,510/year**. Equipment to identify and repair compressed air leaks will cost an estimated **$2,500**. The payback period is **0.7 years** and the equipment will be able to help for future upkeep of the compressed air lines.

AR No. 3: Reduce Air Leaks in the Distribution Center

It is recommended that the facility implements a program to identify and repair compressed air leaks on a regular basis. IAC members found and measured compressed air leaks which, if repaired, can reduce losses by **$540/year**. Equipment to identify and repair compressed air leaks will cost **$500**. The payback period is **0.9 years** and the equipment will be able to help for future upkeep of the compressed air lines.