

Pinnacle Foods Group Inc.

COMPANY BACKGROUND



Pinnacle Foods Corporation, a manufacturer of 12 national leading food brands, added the Fort Madison, Iowa, Armour plant in 2006. The 420,000 square foot facility lies on 117 acres and employs about 500 people. The multi-million dollar plant produces canned foods including Vienna Sausage, Treet, Chili, Stew, Hash, Spreads, Dried beef, and Lunch Buckets.



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PROJECT BACKGROUND

The rise in energy costs due to increased fuel use and depletion of nonrenewable energy sources during the past few years has made energy conservation and energy management practices mandatory throughout the world. The project concentrated on energy conservation opportunities for Pinnacle Foods Corporation through implementing waste heat recovery projects and identifying and developing a plan for other energy conservation opportunities in the plant.

INCENTIVES TO CHANGE

The present work is focused on reclaiming the waste heat from the continuous blow down heat recovery system by restoring the existing system. Also, heat recovery opportunities from boiler flue gases and heat recovery from the hydrostats overflow water were evaluated. In addition, work has been done to increase the efficiency of the heating system in the warehouse area of the plant.

RESULTS

Continuous Blow Down Heat Recovery System

The plant has a blow down heat recovery system that has not been active for more than 20 years. The goal of this project was to restore continuous blow down heat recovery for preheating the boiler make up water. The implementation would save 18,380 therms/yr in energy with an annual cost savings of \$14,704/yr.

Boiler Economizer

The plant has three boilers with a maximum steam capacity of 35,000 PPH for each boiler. The average stack temperature at 60 percent firing rate is 465° F and the average feed water temperature is 232° F. The goal of this project was to recover the waste heat from the stack gases to preheat the feed water using a stack economizer. By recovering this waste heat they will have an opportunity to reduce the energy consumption by 240,220 therms/yr with an annual cost savings of \$252,242. Implementation of this project will increase the boiler efficiency as well as the steam generating capacity of the boiler. It will also lower the concentration of the exhaust gases emitted to the atmosphere.

Insulate Steam Pipe

The facility has uninsulated steam lines in the production area. More than 200 feet of bare steam lines were identified that contribute to an aggregate heat loss of 4270 therms/yr. The challenge was to find the appropriate type of insulation for the application, as the steam lines are exposed to high pressure water during the sanitation of floor and equipment. Pipe and block insulation with stainless steel jacketing is suggested for insulating the bare steam lines and would save \$3,416/yr.



Repair Steam Traps

The goal of this project is to evaluate the condition of steam traps on the unit heaters in the finished goods warehouse area of the plant and to outline a successful testing and replacement program. The plant has 24 steam traps in the warehouse area. They have not been tested or maintained for a number of years because they are 50 feet high and not easily accessible. Industry dictates it is reasonable to assume all have failed and are in need of replacement, which would yield an estimated annual savings of \$14,400. It is recommended four unit heaters be lowered to enable easier maintenance access.

Use Waste Heat of Heat Exchanger for Space Heating

The plant is currently recovering waste heat from hydrostats for preheating hot water. During the evaluation the discharge side of the heat exchanger was measured 110°F. This could be a potential available energy source for space heating. Implementation could save \$5,520 annually if an economical usage can be found.

Air Pollutants Diverted in Tons

| | Total for all sectors |
|------------|-----------------------|
| SO2 | 13.50 |
| CO | 2.00 |
| NOX | 6.56 |
| VOC | 1.74 |
| PM | 0.34 |

Green House Gases Diverted in Tons (CO2 Equivalent)

| | Total for all sectors |
|-------------|-----------------------|
| CO2 | 2587.08 |
| CH4 | 438.03 |
| N2O | 1.11 |
| CFCS | 31.55 |

| Project | Annual Cost Savings | Environmental Results | Status |
|---|---------------------|-----------------------|--|
| CONTINUOUS BLOW DOWN HEAT RECOVERY SYSTEM | \$14,704 | 18,380 THERMS | IN PROGRESS |
| BOILER ECONOMIZER | \$252,242 | 240,220 THERMS | IN PROGRESS |
| INSULATE STEAM PIPES | \$3,416 | 4,270 THERMS | RECOMMENDED |
| REPAIR STEAM TRAPS | \$14,400 | 18,000 THERMS | IN PROGRESS |
| USE WASTE HEAT OF HEAT EXCHANGER FOR SPACE HEATING | \$5,520 | 6,900 THERMS | FURTHER EVALUATION NEEDED FOR USAGE LOCATION |