

Lennox

CASE
SUMMARY

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LENNOX MANUFACTURING

Marshalltown, Iowa
Marshall County

Intern: Zachary Williams
Major: Mechanical Engineering
School: The University of Iowa



The Company

Lennox Industries, Inc. has manufacturing and distribution centers across the United States. The Marshalltown site is the home of the original Lennox Furnace Company Incorporated, which was founded in 1904. The three main product lines at Lennox-Marshalltown are furnaces, air conditioners and coil blowers. These units are marketed throughout the country to Lennox dealers of residential HVAC products. The one million square foot factory has over 1,300 employees.

Project Background

The purpose of the Lennox Manufacturing, Inc.'s P2 intern project was to reduce the environmental impact of the company's operations while increasing efficiency and cost savings. The main focus of the project was on lowering Lennox's oil and absorbents use. Another aspect of the project was finding viable alternatives to the disposal of oil and oily water in the plant. The company looked for opportunities to reduce waste and the costs associated with these wastes.



Incentives to Change

Lennox has shown a strong commitment to the environment. The company participates in many successful recycling programs and continuously seeks opportunities to reduce costs, inefficiencies and wastes. Lennox also constantly pursues many new manufacturing philosophies, which include LEAN, Six Sigma, and ISO 9000.

Results

There were four opportunities identified and investigated for potential annual savings:

1. Work platforms – \$6,635

Ten platforms were purchased and installed for fin press operators to stand on, rather than the fin stock lube pipes, when material needs to be cut out of the fin presses. This reduces the number of leaks while also creating a safer working area and reduces the likelihood of an injury to the operators.

BUSINESS

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2. Recirculation improvements - \$7,220

Two of the fin press recirculation systems do not have the capability to recirculate oil, while the other fin presses do. The oil falls into drip pans, which have the potential to overflow if not regularly drained. The recirculation improvements will save wasted oil that can be reused, reduce absorbent purchases, and reduce the labor and disposal costs related to cleaning up these spills.

3. Tagging system - \$8,180

A tagging system was recommended to make it easier for the operators of the fin presses and other machines to let maintenance know about leaks on these machines. This process involves the operators tagging a leak when it is recognized so maintenance can easily find and identify leaks to be fixed.

4. Reusing absorbents - \$27,400

Using a wringer to remove oil and dirt from absorbents and allow them to be reused will cut down on absorbent purchase and disposal costs by 60 percent. This will also decrease solid waste disposal by 23,000 pounds annually. This process depends on the saturation of the absorbents and further study is needed to validate its feasibility.

5. Oily water treatment

Lennox has a 4,000-gallon tank that contains varying percentages of an oil and water mixture. Disposal fees for the oily water are much higher per gallon than those for a straight oil mixture. Methods such as oil/water separation and other treatment chemicals are being evaluated. However, the projected cost savings do not warrant further pursuit of this project at this time.

Project Summary Table

Pollution Prevention/ Waste Reduction Option	Waste Reduced Per Year	Raw Materials Saved	Annual Cost Savings	Other	Status
Work platforms	100 pounds	12 gallons	\$6,635	Safer work environment for operators	Implemented
Recirculation improvements	2,100 pounds	260 gallons	\$7,220	Reuse oil that is currently wasted	Planned
Tagging system	2,400 pounds	300 gallons	\$8,180	Automatic functions are difficult to implement	Recommended, trial underway
Reusing absorbents	23,000 pounds		\$27,400	Purchase of a wringer is necessary	Recommended; feasibility study needed
Oily water	400-1,993 gallons		\$0	Water not treatable in-house	Not feasible at this time
Totals	27,600 pounds	572 gallons	\$49,435		Implementation in progress