

FINAL REPORT – EXECUTIVE SUMMARY

Project Number: 039-049
Recipient: Hankinson Renewable Energy, LLC
Award Amount: \$500,000
Total Project Costs: \$2,647,571.96



Goal of Project:

HRE's current ethanol production rate is steam-limited during the winter months inhibiting the plant's ability to produce ethanol, thereby limiting overall production. This project will address this limitation through the installation of a Stack Heat Recovery (SHR) system. The SHR system is designed to capture excess heat energy released from the plant's dryer exhaust stack and recycle the heat back into the production process. In addition, the system will collect water condensation from the dryer exhaust stack and use it for boiler make-up and process water. In effect, the system will improve efficiency by decreasing natural gas and make-up water needed, while increasing the production of ethanol and coproducts.

HRE expects to see significant benefits, including:

- Reduction of water usage by 6.4% per gallon of ethanol.
- Reduction of natural gas usage by 8.2% per gallon of ethanol.
- Increase annual net income by \$4,478,000.
- Increase of ethanol production by 10 million gallons.

Significant Findings:

The effectiveness of the technology was evaluated based on the following:

- Reduction of water usage per gallon of ethanol of 2.5%
- Reduction of natural gas usage per gallon of ethanol of 8.62%
- Based on market conditions used when the system was deployed, the net income increase based on the results demonstrated and the estimated potential of an increase in 15.7 million gallons annually would be \$6.8mm.
- Due to demand destruction caused by the pandemic we have not expanded production to fully realize the capability of the SHR system. However, given baseline estimates, production would have increased approximately 15.7 million gallons.

Next Steps:

Continue to monitor system for any additional benefits.

Benefits of the Project to ND:

This project served as a demonstration for other North Dakota ethanol plants interested in utilizing the technology. It resulted in increased ethanol production, increased demand for corn, increased supply of coproducts, and additional revenue in the state.