



Biomass Program

On-Farm Small Scale Waste Energy Demonstration

Grass seed farmers in the Pacific Northwest produce large quantities of straw that must be removed from the fields after harvest. Farmers in Washington State used to burn the straw in the fields, but in the late 1990s a ban on burning straw was enacted to reduce emissions and improve local air quality. Farm Power is collaborating with several organizations to develop an alternative straw disposal method that will add value to the farm production cycle: on-farm gasification of straw to generate power.

This Congressionally-mandated project is supporting the testing of a dual-stage gasification system being developed by Taylor Energy and the Western Research Institute. The system will be capable of processing 500 pounds per hour of grass straw to produce a synthesis gas (syngas) for conversion to power and liquid fuel.

R&D Pathway

This project is composed of three tasks: development of feedstock processing/handling/storage cost estimates, gasifier system development, and on-farm testing of the resulting gasification and power generation system.

Researchers will determine the feedstock physical properties (e.g., particle size, density, moisture

content) required by the gasifier system for optimum performance. Using this data, cost estimates for the harvest, processing, handling, and storage systems/infrastructure as well as cost targets for commercial viability will be developed.

As part of developing a dual-stage gasification reactor for processing grass straw, researchers will test for material corrosion and ash slag buildup. Gas clean-up and conditioning technologies will also be developed to meet the requirements of the power production system and emission regulations.

The small-scale gasification system will be installed and tested at Gady Farms. The system will be run under semi-automatic control and initial testing cycles will be used to identify maintenance issues and to further evaluate the system performance.



The gasifier being developed by Taylor Energy and the Western Research Institute.

Congressionally Directed Bioproducts R&D

Benefits

- Provide an environmentally-friendly straw disposal alternative to burning
- Generate an additional revenue stream for farmers

Applications

This technology will help farmers dispose of grass and other straws while capturing the energy contained in the straw and provide a new revenue stream.

Project Partners

**Farm Power
Bonneville Power Administration
Gady Farms
Inland Power and Light Company
Taylor Energy
USDA Agricultural Research Service
Western Research Institute**

Project Period

FY 2004 – FY 2007

For more information contact:

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Visit the Web site for the Office of the Biomass Program (OBP) at
www.eere.energy.gov/biomass.html

August 2006