

Ernst Biomass

The Agricultural Watershed Institute, Decatur, Illinois
Agwatershed.org, info@agwatershed.org, (217) 877-5640
Study completed and assembled by Lucas M Kappel

Ernst Biomass

9006 Mercer Pike
Meadville, PA 16335

<http://www.ernstbiomass.com/>

Ernst Conservation Seeds

9006 Mercer Pike
Meadville, PA 16335

<http://www.ernstseed.com/>

Wilson Engineering Services, PC

9006 Mercer Pike
Meadville, PA 16335

<http://www.wilsonengineering.com/>

Background

Ernst Biomass was formed in 2008 with the purpose of manufacturing solid biomass fuel. They intend to do this by constructing a dedicated facility. Ernst Biomass is a branch of Ernst Conservation Seed, which has 50 + full-time employees. This organization has been growing and cultivating native seeds for over forty years. This duration of time has allowed them to become one of the largest producers of switchgrass and other native seeds.

After the project's establishment, Ernst Biomass hired Wilson Engineering Services for project consultation and development. Wilson Engineering Services has and will continue to offer structural analysis, geotechnical investigation, and design services for the building and operations of the biomass facility. Ernst's biomass facility has been under construction since 2009, and is currently scheduled to be completed by fall of 2012.

Driving Forces

Due to present day energy issues, Ernst Conservation Seeds realized the necessity of owning a biomass densification facility. They believe owning this type of facility will allow them to grow as a company. This realization prompted Ernst Conservation Seeds to form Ernst Biomass and to build a pelletizing facility. This facility will not only help Ernst Conservation Seeds grow, it will also help entities outside of Ernst to grow.

Wilson Engineering Services believes that this facility will be vital to communal and national growth. It is expected to provide farmers with additional income, demonstrate solid alternative fuels potential, reduce greenhouse gases, and generate local economic revenue. It is these four goals, along with the Ernst Seed Conservations motivation, that is expected to influence duplicate models across the country. While Ernst Conservation Seeds is concerned about growing as a company, it does help that the founder, Calvin Ernst, is inherently interested in biomass. Calvin Ernst was interested enough to install a 100,000 BTU biomass boiler in his own home. If Calvin Ernst did not have this inherent interest, the project may have never been developed.

Economics

The goal for Ernst Biomass is to build a facility with the capacity to fill any size order in an adequate amount of time. A facility of this scale would require farmers with a large enough supply of feedstock. According to company calculations, the 12,000 sq. ft. pelletizing facility is predicted to generate approximately 24,000 tons of biomass from 3500 acres of land per year. It is important to note that large production facilities come with equally large construction costs. It has been stated that this project has exceeded three million dollars.

In order to fund the construction of their facility, Ernst Biomass has acquired several grants. The first grant they received was from the Pennsylvania Energy Development Authority in 2009 for \$896,400. The grant was issued to aid in building the facility. A major reason Ernst was awarded the grant was because they predicted they could create jobs. Ernst estimated the construction and operation of their facility would generate 10 permanent full time jobs, 80 permanent part time jobs, and 12 temporary part time jobs. Another grant came from

Ben Franklin Technology Partners for planning, development, and plant operation. Ben Franklin Technology Partners believed that with this grant money, Ernst Biomass would be able to further the construction of their biomass densification facility. This grant was awarded in 2010 for \$225,000.

Production and Utilization

During the research phase of the project, Ernst perfecting their biomass pellet formula with the help of Andritz-Sprout. Andritz-Sprout is a company that produces animal feed and biofuels. Ernst was given two days in their pellet testing facility. While working with Andritz-Sprout, Ernst was able to determine the optimal grind size and die variation. This led to the production of a pellet with quality appearance, durability, and bulk density. After the quality tests were completed at the Andritz-Sprout facility, Ernst attempted to mass produce this quality pellet. In order

to mass produce a biomass pellet, Ernst needed a test production facility.

For the purpose of research, Ernst Biomass partnered with the Greene Team Pellet Fuel Company. Greene Team Pellet Fuel Company closed down their plant for two days. During these two days the companies worked together to complete a test batch of commercial scale switchgrass pellets. The production of a test batch required the installation of new dies. These new dies were funded with the help of the West Penn Power Sustainable Energy Fund, a non-profit organization that funds Pennsylvania clean power projects. The test fell short of the goal when it reached a lower than expected quantity of produced pellets. This less than expected production quantity led to several important discoveries. The first discovery was that bioglass pulp contains more moisture than sawdust. The second discovery was that bioglass pulp flows at a different rate than sawdust. The different flow rate and higher moisture content caused machines to become clogged. It also disorganized process timing. Ernst believes both problems can be solved with a plant designed to pelletize grass. For further testing and production, Ernst decided to purchase their own briquetter.

This briquetter has been used on a limited basis and is meant to be the foundation of the new facility. Once the facility is built, Ernst Biomass is planning on manufacturing biomass pellets that meet specific requirement of demanding entities.

During the development of the facility, Ernst encountered several construction difficulties. Ernst states that they were expecting to experience difficulties due to the multi-million dollar scale of the project. The facility was most recently expected to be completed as of spring of 2012. After the facilities completion, Ernst is expecting to produce five tons of pellets per hour. They believe that this will be possible only if they have a supply large enough to fulfill the needs of the facility.

Andritz-Sprout

366 W. Penn St.
Muncy, PA 17756

<http://www.andritz.com/feed-and-biofuel>

Greene Team Pellet Fuel Company

150 Carmichaels Rd.
Carmichaels, PA 15320

<http://www.greenteam pellets.com/>



The pellet die rack at Andritz-Sprout



Greene Team in the process of bagging the switchgrass pellets.



Ernst Facility construction as of September 2011

Sources

- "BFTP/CNP Invests \$2.4 Million in Regional Companies." *Ben Franklin Technology PARTners*. Ben Franklin Technology Partners, 1 Oct. 2010. Web. 01 May 2012. <<http://benfranklin.org/news/bftpcnp-invests-2-4-million-in-regional-companies>>.
- "Biomass." *Ernst Conservation Seeds*. Ernst Conservation Seeds. Web. 01 May 2012. <<http://www.ernstseed.com/biomass/>>.
- "Biomass Processing Facility - Ernst Biomass, LLC." *Wilson Engineering Services*. Wilson Engineering Services, PC, 2009. Web. 01 May 2012. <<http://www.wilsonengineeringservices.com/ernstbiomass.html>>.
- Ciccocioppo, Barry. "Governor Rendell: Investing In Clean Energy Projects Creates Jobs, Strengthens The Economy, Cleans The Environment." *Pennsylvania Department of Environmental Protection*. Commonwealth of Pennsylvania, 2009. Web. 30 Apr. 2012. <<http://www.portal.state.pa.us/portal/server.pt/community/newsroom/14287?id=2321&typeid=1>>.
- "Crawford County Company to Present Innovate Energy Program at EBW Expo & Conference in Pittsburgh." *Pennsylvania Department of Environmental Protection*. Commonwealth of Pennsylvania. Web. 30 Apr. 2012. <<http://www.portal.state.pa.us/portal/server.pt/community/newsroom/14287?id=7777&typeid=2>>.
- "Crawford County Farmer Readies Switch Grass Plant." *Longview News* [Longview] 7 Mar. 2012. Print. *Ernst Biomass*. Ernst Conservation Seeds. Web. 01 May 2012. <<http://www.ernstbiomass.com/>>.
- "Ernst Biomass." *Keystone Edge*. Issue Media Group. Web. 01 May 2012. <<http://www.keystoneedge.com/companies/ernstbiomass0624.aspx>>.
- Gushard, Keith. "Ernst Biomass Pushing Pellets as next Fuel Source." *The Meadville Tribune*. Meadville Tribune, 16 Apr. 2012. Web. 03 May 2012. <<http://meadvilletribune.com/x2108299607/Ernst-Biomass-pushing-pellets-as-next-fuel-source>>.
- "Our History." *West Penn Power Sustainable Energy Fund*. West Penn Power Sustainable Energy Fund. Web. 01 May 2012. <<http://www.wppsef.org/history.html>>.
- Soberg, Matt. "Pennsylvania Seed Company Embraces Biomass." *Biomass: Power and Thermal*. BBI International, 11 Oct. 2011. Web. 01 May 2012. <<http://biomassmagazine.com/articles/5855/pennsylvania-seed-company-embraces-biomass>>.