DOE STTR Phase I Final Technical Report
For
Agri-Tech Producers, LLC
Project Title
"Developing a Mobile Torrefaction Machine"

DOE Award Number: DE-SC00001209

Topic Number/Sub-Topic Letter: 18/d. Biomass Densification

Company Name: Agri-Tech Producers, LLC, 116 Wildewood Club Court, Columbia, SC 29223
Project Director: Joseph J. James, President, Agri-Tech Producers, LLC
Principal Investigator: Dennis Hazel, North Carolina State University
Project Title: Developing a Mobile Torrefaction Machine

DOE STTR Phase I Final Technical Report

Executive Summary: The goal of this project, sponsored by Agri-Tech Producers, LLC (ATP), the small business grantee, was to determine if the torrefaction technology, developed by North Carolina State University (NCSU), which ATP has licensed, could be feasibly deployed in a mobile unit. The study adds to the area investigated, by having ATP's STTR Phase I team give thoughtful consideration to how to use NCSU's technology in a mobile unit.

The findings by ATP's team were that NCSU's technology would best perform in units 30' by 80' (See Spec Sheet for the Torre-Tech 5.0 Unit in the Appendix) and the technical effectiveness and economic feasibility investigation suggested that such units were not easily, efficiently or safely utilized in a forest or farm setting. (Note rendering of possible mobile system in the Appendix) Therefore, the findings by ATP's team were that NCSU's technology could not feasibly be deployed as a mobile unit.

However, mobility enhancements, primarily in the form of a modular design could be and have been incorporated into the design of the commercial units to be manufactured on behalf of ATP, by its design and manufacturing partner, the Kusters Zima Corporation (KZC). This modular design allows ATP's torrefaction units to be taken apart and cost-effectively moved to another location and there re-assembled.

The project otherwise benefits the public in that it helped ATP to establish an ongoing working relationship with the Electric Power Research Institute (EPRI), which wanted to know if a pilot torrefaction plant could be built in one area, to provide test-burn fuels to utilities in that region, and then cost-effectively moved to another region, to do the same. Note EPRI's letter and Overview of its Torrefaction Pilot Testing work in the Appendix) After EPRI funded a co-investigation of the feasibility of a moveable pilot plant, ATP had KZC create a modular design as a way to add some semblance of mobility to its units.

Additional public benefits include the use of "moveable" units to treat and generate benefits and revenues from the conversion of large amounts of trees, damaged or downed by disease, hurricanes, or other disasters.

Lastly, ATP is using the things it learned during the project, as it helps its operating affiliate, ATP-SC, LLC, develop a pilot torrefaction plant in Allendale, South Carolina, with an expected start date of January 2015. Note the schematic site layout in the Appendix.

Comparison of Actual Accomplishments to Goals and Objectives: The key goals of the Technical Approach were and the Actual study results are the following:

Goal: Miniaturize the process, so a unit could fit on a 20' truck.
Actual: Process could be miniaturized, but output would be very small (approximately 200 pounds/hour)

Goal: Assure that the process could operate in a forest setting and:

1. Not be a fire hazard. **Actual:** Fire Hazard very high and lots of support required to prevent or extinguish any fires started.

2. Have limited impact on forest environment. **Actual:** Other than fire hazard, little more impact on forest environment than other forestry equipment.

3. Have acceptable mobility on highways and in the forest. **Actual:** Possible.

4. Have a cost-effective, mobile power source. **Actual:** Not possible to have a cost-effective mobile power source.

5. Be safe and reliable. **Actual:** Possible to make reliable, but fire hazard remains.

6. Units could be linked to a mobile briquetting or pelletizing function. **Actual:** Linkage possible, but power costs prohibitive. Also, there is a need to cool the torrefied material, before it comes in contact with the oxygen in the atmosphere, prior to densification measures. Mobile cooling equipment added bulk and required very expensive mobile power.

Goal: Units could be manufactured at a reasonable price. **Actual:** Possible.

Goal: The process was economically feasible. **Actual:** The problem is that costs/ton of product were very high and volumes were very low, resulting in product costs that were in the $800/ton range. (Note. At 200 lbs/hour output, it would take 10 hours to make a ton of product. Assuming a ratio of 3 tons of greenwood, at $35/ton, for every 1 ton of torrefied wood, the feedstock cost per ton would be $105/ton. Assuming that a minimum of two individuals, at a fully-loaded cost of $35/hour, each, were paid to operate the torrefaction and densification units, that per ton cost would be $700/ton.) With coal and other fuels costing in the $70 to $90/ton range, the small and mobile process is not economically feasible at such low production rates.

Summarize Project Activities: Project Activities included the following:

1. KZC's engineers assessed the potential of NCSU's stationary prototype unit, which produced approximately 2-300 pounds/hour.

2. KZC's engineers explored miniaturizing the process.

3. KZC's engineers explored how to increase throughput.

4. US Forest Service staff helped explore if the process might operate in a safe and environmentally acceptable manner in a forest setting.

5. KZC's engineers explored how the units might be designed to be mobile.

6. NCSU staff assessed the potential that units would be acceptable to customers (forestry industry) and KZC engineers explored if units could be manufactured and sold at reasonable prices

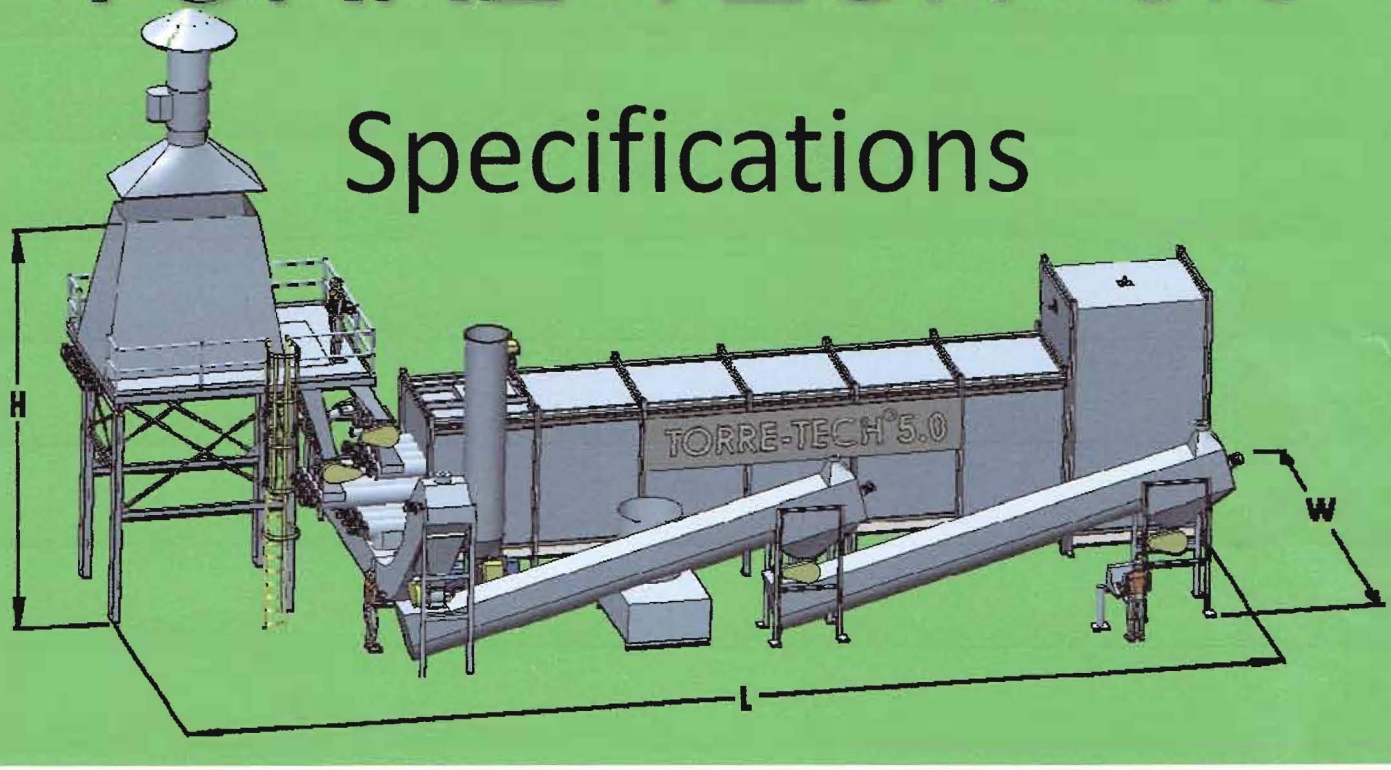
Products Developed Under the Award: There were no new products or patents developed under the award.

Appendix

- Torre-Tech 5.0 Spec Sheet
- Rendering of Possible Design of Mobile Torrefaction Unit
- EPRI Letter & Pilot Torrefaction Testing Overview
- ATP-SC's Pilot Plant layout
- Federal Forms, As Required

TORRE-TECH® 5.0

Specifications



Feedstock Input:

- Types
  - Wood Chips (<0.5 in/12 mm)
  - Bio-Crops (Switchgrass, Miscanthus, etc.)
  - Energy Bio-grasses
- Feed Rate of Wood Biomass
  (Moisture Content < 40%)
  15,000 lbs/hr / 6,800 kg/hr (Dry Basis)

Electrical Consumption:

- 300 kW—Connected Requirement
- 225 kW—Estimated Operating Usage

System Dimensions:

	IP (FT)	SI (M)
Length (L)	80	24.0
Width (W)	32	9.8
Height (H)	30	9.0

Product Output:

- 5 Tons per Hour Torrefied Product
- Energy Content—10,000 BTU/lb / 5,500 kCal/kg (± 10%)
- Moisture Content < 10%
- Input to Output Ratio: Approx. 3 tons of "green" feedstock yields 1 ton of torrefied product.
  (Based on <40% moisture content of feedstock)
  - Input to Output ratios may vary depending on type of feedstock and operating conditions.

Gas Consumption:

- Natural or Propane
- 11.0 million BTU/hr—Connected Requirement
- 200,000 BTU/hr—Estimated Operating Usage
  (fuel required for pilot as safety feature)

Water Usages:

- Cooling Process
- Fire Suppression Functions

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KUSTERS ▪ ZIMA
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Tel (864) 576-0660 Fax (864) 587-5761
KustersZima.com

Possible Design Criteria for Mobile Torrefaction Equipment

1. Mobile units would process approximately 2 – 3 tons/hour of torrefied product. This would require an incoming feedstock of approximately 6 – 9 tons/hour of green wood chips.
2. Incoming feedstock is expected to be around 40 – 50% moisture content and is required to be pre-sized to ½" or less chip size for optimal processing. Any excess moisture content above 40 – 50% would affect the production output time of mobile units.
3. Any size reduction to achieve required ½" or less chip size and pre-screening of feed chips would be the responsibility of the customer and the site location.

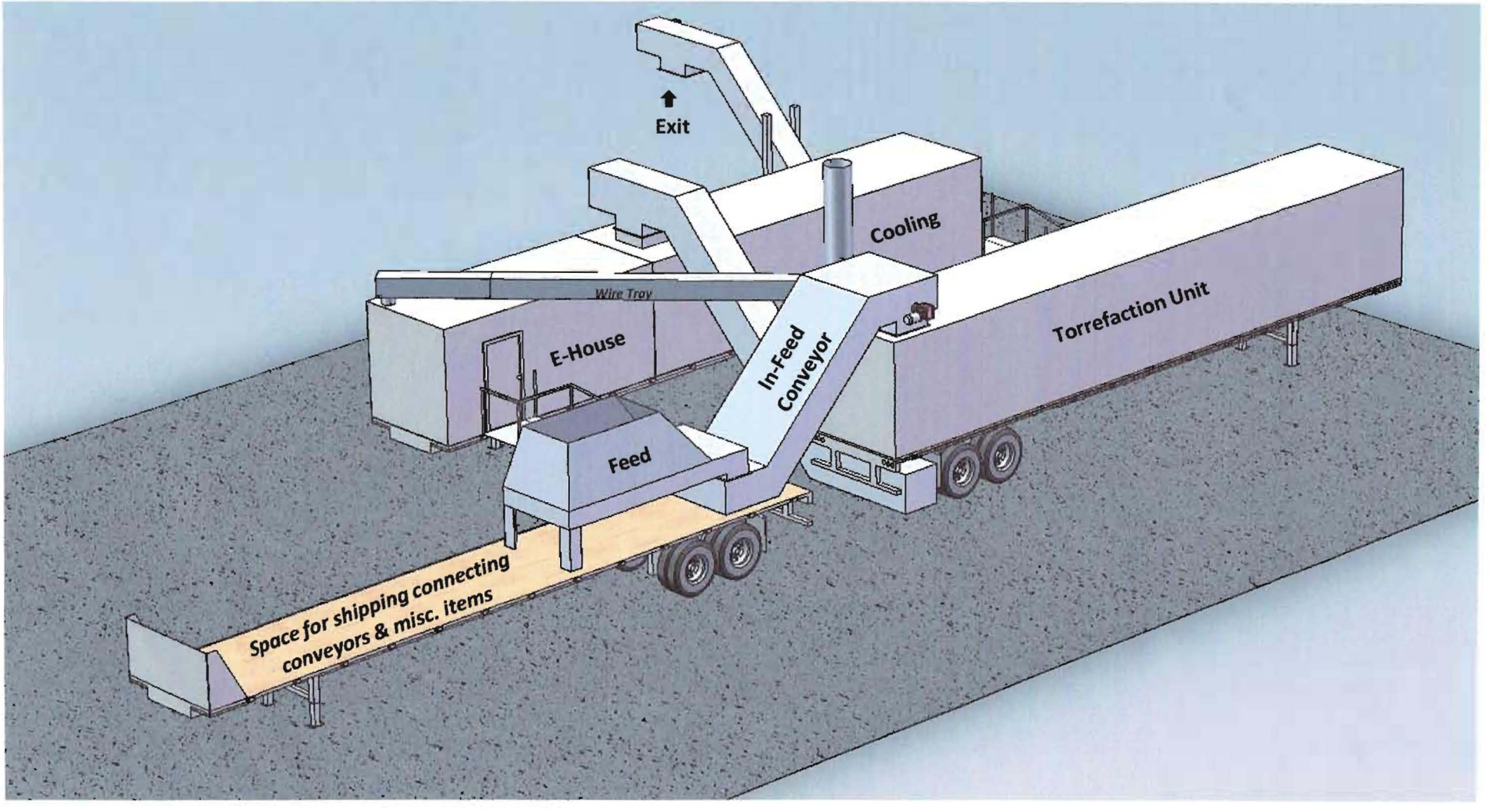
Mobile units would require a minimum of 3 mobile trailers as described below:

1. Trailer 1 – Incoming Feed Hopper – This would be a custom built commercial air-ride flatbed trailer approximately 40 – 50 feet in length in which feedstock will be loaded into the main hopper. The unit would meter feed the Torrefaction Trailer via incline screw augers. The max loading height of Feed Hopper trailer would be less than 12 feet tall in order to accommodate onsite field loaders. This trailer would also be used to transport incline screws, discharge cross screws, and final product discharge screws as well as any other required site assembled items.

2. Trailer 2 – Torrefaction Trailer – This would be a custom built commercial air-ride trailer approximately 40 – 50 feet in length. It would be designed under a maximum height of 13 feet 6 inches for traveling and relocation. It would be the main torrefaction unit which consists of torrefaction feed compartment, combustion chamber and a discharge point. The exiting discharge cross screw would connect to the underside of this trailer and would exit perpendicularly out to one side and then incline upward to feed the Cooling Trailer.

3. Trailer 3 – Cooling/Power Plant – This would be a custom designed commercial air-ride trailer approximately 40 – 50 feet in length. It will have a connection point in which it would connect to the discharge cross screw coming from the Torrefaction Trailer in order to receive product for final cooling and processing. This trailer will also be considered our "Power Plant" and will accommodate other items such as; main control panel and E-house for all 3 trailers, electrical generator, fuel (propane gas and diesel), air compressor and water storage tank.

The arrangement of these trailers for onsite production would have Trailer 1 (Incoming Feed Hopper) and Trailer 2 (Torrefaction Unit) parked end to end in a linear layout. Trailer 3 (Cooling/Power Plant) would be located and set-up parallel beside Trailer 2 for connection of discharged product.


Exit
Cooling
Wire Tray
E-House
In-Feed Conveyor
Torrefaction Unit
Feed
Space for shipping connecting conveyors & misc. items

EPRI | ELECTRIC POWER RESEARCH INSTITUTE

May30, 2013

Mr. Joseph J. James, President
ATP-Sc, LLC
C/O Agri-Tech Producers, LLC
116 Wildewood Club Court
Columbia, South Carolina 29223

Subject: Letter of interest in ATP-SC, LLC's Pilot Torrefaction Plant in South Carolina

Dear Joe:

I am very glad to hear that ATP-SC, LLC, a torrefied biomass manufacturing affiliate of Agri-Tech Producers, LLC (ATP), is raising funds to build a pilot torrefaction plant in South Carolina.

As you know, the Electric Power Research Institute (EPRI), which is the research arm for North America's electric utilities, provided ATP with funding, a few years back, to allow us to jointly explore the feasibility of developing a small torrefaction plant to provide local electric utilities with thousands of tons of torrefied fuel, for test burns. It is good to see that you are putting that research to good use.

I will be glad to let our member utilities know about the availability of this fuel, as your pilot plant comes on line. I am aware of utilities considering paying in the range of $200/ton, for such fuels for test burn purposes. And, there are utilities in the EU who have been known to pay as much as or more than $210/ton for such fuels.

I look forward to continuing to work with you in the area of torrefied biomass fuels.

Sincerely,

Luis Cerezo
Technical Executive Renewables
Electric Power Research Institute
1300 West WT Harris Blvd., Charlotte, NC 28262
lcerezo@epri.com

EPRI | ELECTRIC POWER RESEARCH INSTITUTE

Torrefaction Pilot Testing

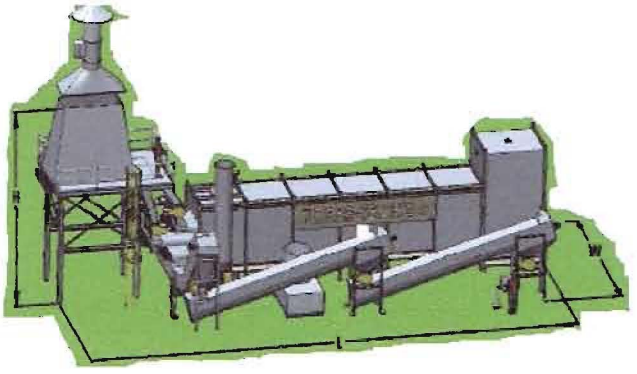


Illustration courtesy of Agritech Producers LLC

- **Reduce technological and financial risk associated with torrefied biomass fuels in co-firing applications**
- **Accelerate time to market of torrefaction technologies by producing large volumes of product required by the utility industry**
- **Accelerate performance of large-scale burning tests using torrefied materials, supporting long-term fuel contracts**

Background, Objectives, and New Learnings

Background:

Biomass torrefaction involves treatment of raw biomass in an oxygen-free environment at a temperature of approximately 250°-300°C. The resulting solid torrefied char generally contains up to 30% more energy content per unit mass than the raw feedstock. Compared to raw wood products (chips and pellets), torrefied biomass contains a far lower amount of volatiles and virtually no water.

Torrefied biomass allows for higher levels of mass densification through pelleting/briquetting than regular biomass. Torrefied pellets are hydrophobic and likely do not degrade physically. Recent EPRI tests confirm that torrefied pellets/briquettes can be produced from a wide variety of feedstock (sawdust, willow, larch, verge grass, demolition wood, and straw), yielding similar product specifications. Additionally, EPRI completed an engineering study to explore the feasibility of small torrefaction facilities (2 tons/hour to 5t/h of product capacity).

This project will test a pilot torrefier to validate performance estimated in the prior EPRI study and conduct extensive co-firing tests at the Boardman (Oregon) host plant, using pilot test-produced torrefied chips and pellets from local arundo donax, hybrid poplar, agri-waste and pine.

Objectives:

- Independently assess performance of a pilot scale 2-5 tons/hour torrefier using several woody and herbaceous feedstocks to assess quality of processed products, process energy efficiency, flexibility, mass yields, and emissions.
- Produce approximately a total of 10,000 ton of torrefied product (chips and pellets) from several feedstocks to support subsequent co-firing with coal at various ratios and 100% torrefied biomass 24-hours burning tests at the 600MW Boardman host plant (Portland General Electric).
- Participate in burning tests at the Boardman host plant to extract lessons learned on the large-scale application of this engineered fuel.

New Learnings:

- In-depth knowledge of torrefied biomass production and key issues affecting quality, emissions and economics
- Large-scale burning tests at host plant using this engineered fuel in co-firing with coal, and 100% feed at an existing plant

Benefits

- Reduce the technical and economic risk of adopting this new high-potential engineered fuel in existing coal-burning plants
- Expand the use and geographic range of economic biomass to energy production

- Accelerate application of commercial torrefaction technology for high-ratio biomass co-firing
- Optimize operating performance to meet required fuel specifications from a variety of biomass feedstocks

Project Approach and Summary

The torrefaction process demonstration will be performed in collaboration with Idaho National Laboratory (INL), using its process demonstration unit (PDU) equipment, for extensive small-scale testing, including handling, grinding, torrefaction, and densification using arundo, hybrid poplar, agri-waste and pine, previous to the pilot test of the pre-commercial 2-5t/h torrefaction plant, and will use on-site facilities, expertise, and extensive instrumentation/control and analyses capabilities.

The project will produce torrefied biomass from three different types of feedstock (woody, perennial grass, and agricultural waste) in sufficient quantity to support extensive burning tests at the Boardman host power plant. The pilot plant will integrate the torrefaction technology selected with decomposition, grinding, drying, and densification modules. The process will be supervised from a centralized control room and will include a chemical laboratory for sample quality control.

Extensive test burns using the torrefied biomass will be conducted at the Boardman host site. These tests will include assessment of torrefied biomass handling/grinding, combustion efficiency, emissions, and ash characterization.

Deliverables

Small scale testing of torrefaction/densification at INL: Summary report on torrefaction and densification tests with arundo, hybrid poplar and other agri-waste materials (slated for delivery in 2012).

Pilot torrefaction plant performance assessment: Summary report on pilot plant torrefier performance, yields, emissions and densification using arundo, agri-waste, hybrid poplar, pine as feedstock (2012).

Torrefied biomass co-firing with coal burning tests at Boardman plant: Summary of burning test results and lessons learned at Boardman using several ratios of torrefied biomass-coal (2013).

24-hour, 100% torrefied biomass burning test at Boardman: Summary of burning test results and lessons learned at Boardman during 100% torrefied biomass 24-hour test (2014).

Price of Project

The estimated cost to complete this project is $1.5 million over a three-year period (2012-2014). The cost to participate is $75K per year for three years. This project qualifies for Tailored Collaboration (TC) funding.

Project Status and Schedule

- The project is anticipated to start 4Q 2011.
- Small-scale of torrefaction and densification using arundo and other species at INL to be completed 4Q 2011.
- Pilot torrefier plant testing is scheduled for July-November 2012.
- Torrefied chips/pellets-briquettes will be available for shipping from October 2012 to March 2014.
- Final summary torrefier testing report is scheduled for 1Q 2013.
- Host plants co-firing with coal burning tests are scheduled to be completed in 1Q 2013.
- 100% torrefied biomass 24hours full power test at Boardman is anticipated 1Q 2014.
- Test reports on the torrefied biomass burning tests are scheduled to be issued in mid-2013 and mid-2014.

Who Should Join

Companies interested in high co-firing ratios of biomass in existing coal plants with minimum plant hardware back-fitting costs; companies with RPS generation requirements and GHG emissions constraints; companies with coal plants in areas with easy access to biomass, interested in life-extension of assets with minimum investment cost to comply with environmental limits; and companies with interest in torrefied biomass pre-processing and technology hands-on application, could benefit from participation in this project.

Contact Information

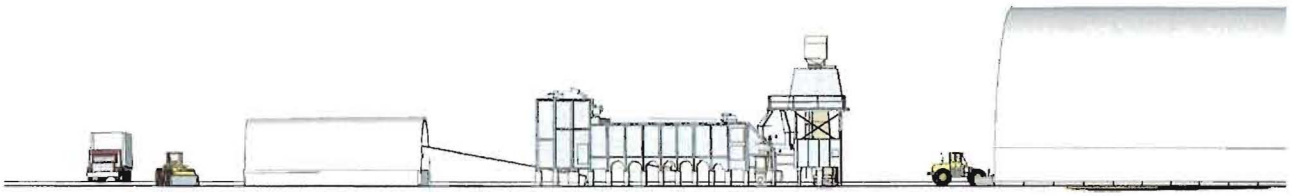
For more information, contact the EPRI Customer Assistance Center at 800.313.3774 (askepri@epri.com).

Technical Contact

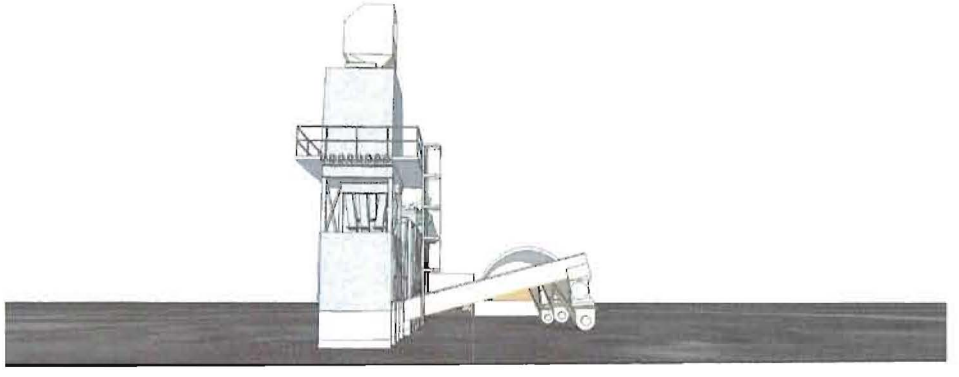
Luis Cerezo at 704.595.2687 (lcerezo@epri.com).

Product ID: 1024705 Project ID: 071809 November 2011

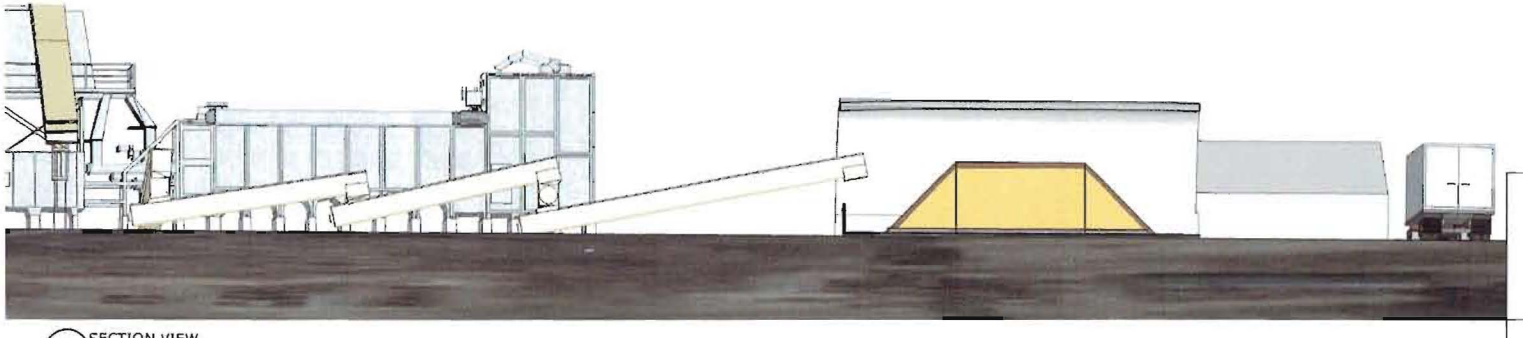
Electric Power Research Institute
3420 Hillview Avenue, Palo Alto, California 94304-1338 • PO Box 10412, Palo Alto, California 94303-0813 USA
800.313.3774 • 650.855.2121 • askepri@epri.com • www.epri.com



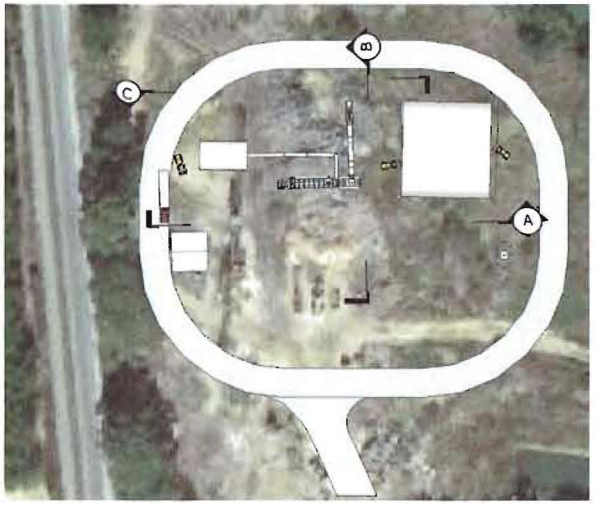
A SECTION VIEW
NTS



B SECTION VIEW
NTS



C SECTION VIEW
NTS



SITE PLAN
NTS

ISSUED FOR INFORMATION

DATE 04/29/13 BY Jeanette Egan

MID-SOUTH ENGINEERING COMPANY

NO.	DATE	BY	DESCRIPTION
D	04/29/13	JE	ISSUED FOR INFORMATION
C	04/09/13	JE	ISSUED FOR INFORMATION
B	04/02/13	JE	ISSUED FOR INFORMATION
A	03/27/13	JE	ISSUED FOR INFORMATION

REVISIONS

MID-SOUTH ENGINEERING CO.
1058 Malvern Ave
Hot Springs, Arkansas 71901
200 MacKenan Drive
Cary, North Carolina 27511

SMALL TORREFACTION PLANT LAYOUT
1.25TON/HR
AGRI-TECH PRODUCERS, LLC

SCALE	DRAWING NO.	REVISION
NTS	6076-1PS01-G01	D

DOE F 2050.11
(2-87)
(Previous GC-792)

OMB Control No.
1910-0600

PATENT CERTIFICATION

Agri-Tech Producers, LLC
Contractor

☐ Interim Certification
☐ Final Certification

DE-SC0000 1209
DOE Prime and/or Subcontract Nos.

Contractor hereby certifies that:

1. All procedures for identifying and disclosing subject inventions as required by the patent clause of the contract have been followed throughout the reporting period.

2. There were no subcontracts or purchase orders involving research, development, and demonstration except as follows: [State none when applicable.]

3. No inventions or discoveries were made or conceived in the course of or under this contract other than the following *(Certification includes ☐, does not include ☐ all subordinates):*

   [State none when applicable.]

TITLE	INVENTOR	DATE REPORTED	DOE "S" NO.*
None			

4. The completion date of this contract is as follows: 9/11/2010

5. The following period is covered by this certification:

August 12, 2009 (Month / Day / Year) to September 11, 2010 (Month / Day / Year)

Agri-Tech Producers, LLC
Contractor

116 Wilderwood Club Ct
Columbia, SC 29223
Address

Agri-Tech Producers, LLC
Signature

3/14/14
Date of Certification

* Also include Subcontract No. If available

U.S. DEPARTMENT OF ENERGY JUNE 2005

FINANCIAL ASSISTANCE
PROPERTY CLOSEOUT CERTIFICATION

Award Number	Recipient *(Name and address)*
DE-SC0006209	Agri-Tech Producers, LLC 116 Wildewood Club Ct Columbia, SC 29223

The purpose of this report is to facilitate the closeout of the Award. Based on the records maintained by the Recipient in accordance with the Property Management standards set forth in the Award, the following data reflects the Recipient's closeout inventory of real and personal property that was provided by the Department of Energy (DOE) or partially or wholly acquired with project funds.

I. EQUIPMENT

A. **Federally-Owned:** *(Government Furnished Equipment): (10 CFR 600.133(a), 600.232, 600.322, or Federal Demonstration Partnership (FDP) General Terms and Conditions No. 33, as applicable):* ☑ No ☐ Yes

(If **yes,** *attach property inventory list that includes item description, manufacturer, model, serial number, original acquisition date, original acquisition cost and disposal condition code per the Federal Management Regulation 102-36.240)*

B. **Equipment Acquired with Award Funds where Title Vests in the Recipient with further obligations to DOE:** *(10 CFR 600.133, 600.134, 600.232, or 600.321, as applicable)*

☑ No ☐ Yes

If **yes,** does the equipment have a per unit fair market value of $5,000 or more? ☐ No ☐ Yes

(If **yes,** *attach a property inventory list that includes item description, manufacturer, model, serial number, original acquisition date, original acquisition cost, disposal condition code per the Federal Management Regulation 102-36-240 and one of the disposition codes listed below)*

(1) The property will continue to be used for the purposes authorized in the Award.

(2) The property is no longer needed for the purposes of the Award, and will be used on another Federally sponsored activity *(List Activity and Federal Agency):*

(3) The Recipient wishes to retain the property and compensate DOE for its share of the current per unit fair market value. *(Identify the fair market value on the attached property inventory list and describe how the value was determined).*

(4) The property is no longer needed for the purposes of the Award or other Federally sponsored activities and the Recipient requests DOE disposition instructions.

II. SUPPLIES *(10 CFR 600.135, 600.233, 600.324, or FDP General Terms and Conditions No. 35, as applicable)*

Does the residual inventory of unused supplies exceed $5,000 in total aggregate value? ☑ No ☐ Yes *(if* **yes,** *check block below)*

☐ The supplies will be used on another Federally sponsored activity *(List Activity and Federal Agency).*

☐ The supplies will be sold or retained for use on non-Federally sponsored activities and the Recipient will compensate DOE for its share of the sales proceeds (or estimate of current fair market value). Attach a list of the supplies and complete the following Worksheet:

Sale proceeds or estimate of current fair market value	$_____
Percentage of Federal participation	_____%
Federal share	$_____
Selling and handling allowance	$_____
Amount to be remitted to DOE	$_____

U.S. DEPARTMENT OF ENERGY

FINANCIAL ASSISTANCE
PROPERTY CLOSEOUT CERTIFICATION

III. REAL PROPERTY: *(Real Estate - 10 CFR 600.132, /600.231, 600.321, or FDP General Terms and Conditions No. 32, as applicable)* ☑ No ☐ Yes *(If yes, complete A –C)*

A. Description of Real Property:

B. Complete Address of Real Property:

C. Period of Federal Interest in the Property: **From** _____ **To** _____ (Unless the award specifies otherwise, the Federal Interest in the property ends when the award project period ends.)

D. Disposition Preference Request. If the period of Federal Interest in the property exceeds the project period, check one of the following blocks to indicate your disposition preference:

☐ Transfer property to another Federal award.

☐ Sell and compensate DOE.

☐ Return to DOE.

☐ Retain title and compensate DOE for its share of the current fair market value of the property.

Certification: I certify to the best of my knowledge and belief that all information presented in this report is true, correct and complete, and constitutes a material representation of fact upon which the Federal government may rely.

Name	Signature	Title	Date
3/14/14	JOSEPH J. JAMES	Pres	3/14/14

FINANCIAL ASSISTANCE
PROPERTY CLOSEOUT CERTIFICATION

To be completed by the Department of Energy:

DOE PROPERTY DISPOSITION

☐ Negative Report

☐ Real Property:

☐ Equipment:

☐ Supplies:

Property Management Official Name	Signature	Date

FEDERAL FINANCIAL REPORT

(Follow form instructions)

1. Federal Agency and Organizational Element to Which Report is Submitted	2. Federal Grant or Other Identifying Number Assigned by Federal Agency (To report multiple grants, use FFR Attachment)	Page	of
US Department of Energy, Office of Science	Grant No. DE-SC0001209	1	1 pages

3. Recipient Organization (Name and complete address including Zip code)

Agri-Tech Producers, LLC, 116 Wildewood Club Court, Columbia, SC 29223

4a. DUNS Number	4b. EIN	5. Recipient Account Number or Identifying Number (To report multiple grants, use FFR Attachment)	6. Report Type	7. Basis of Accounting
619322782	05-0632234	ASAP Account - ID # 1109191	X□ Quarterly □ Semi-Annual □ Annual □ Final	□X Cash □ Accrual

8. Project/Grant Period From: (Month, Day, Year)	To: (Month, Day, Year)	9. Reporting Period End Date (Month, Day, Year)
12-Aug-09	May 11, 2010 - Extension in Process	

10. **Transactions**	Cumulative
(Use lines a-c for single or multiple grant reporting)	
Federal Cash (To report multiple grants, also use FFR Attachment):	
a. Cash Receipts	100,000
b. Cash Disbursements	100,000
c. Cash on Hand (line a minus b)	-0-
(Use lines d-o for single grant reporting)	
Federal Expenditures and Unobligated Balance:	
d. Total Federal funds authorized	100,000
e. Federal share of expenditures	100,000
f. Federal share of unliquidated obligations	-0-
g. Total Federal share (sum of lines e and f)	100,000
h. Unobligated balance of Federal funds (line d minus g)	-0-
Recipient Share:	
i. Total recipient share required	-0-
j. Recipient share of expenditures	-0-
k. Remaining recipient share to be provided (line i minus j)	-0-
Program Income:	
l. Total Federal program income earned	-0-
m. Program income expended in accordance with the deduction alternative	-0-
n. Program income expended in accordance with the addition alternative	-0-
o. Unexpended program income (line l minus line m or line n)	

11. Indirect Expense	a. Type	b. Rate	c. Period From	Period To	d. Base	e. Amount Charged	f. Federal Share
	-0-					-0-	-0-
				g. Totals:			

12. *Remarks: Attach any explanations deemed necessary or information required by Federal sponsoring agency in compliance with governing legislation:*

13. Certification: By signing this report, I certify that it is true, complete, and accurate to the best of my knowledge. I am aware that any false, fictitious, or fraudulent information may subject me to criminal, civil, or administrative penalities. (U.S. Code, Title 218, Section 1001)

a. Typed or Printed Name and Title of Authorized Certifying Official	c. Telephone (Area code, number and extension)
Joseph J. James, President	(803) 462-0153
	d. Email address: josephjjames@bellsouth.net
b. Signature of Authorized Certifying Official	e. Date Report Submitted (Month, Day, Year): 3/14/14
	14. Agency use only:

Standard Form 425
OMB Approval Number: 0348-0061
Expiration Date: 10/31/2011

FINAL SCHEDULE OF COSTS BY ELEMENT & CERTIFICATION

Company: Agri-Tech Producers, LLC
Address: _____

Agreement No: DE-SC-0000209
Project Period: 8/12/09 - 9/01/10

Total Estimated Cost of Project: $ 100,000

For Phase II only:

Labor	
Fringe Benefits @%	
Overhead @%	
Equipment	
Travel	
Materials and Supplies	
Subcontracts	
Subcontract #1 (Co._____)	
Subcontract #2 (Co._____)	
Subcontract #3 (Co._____)	
Other Direct Costs	
Adjustments (Explain)	_____
Total Costs (less G&A)	
G&A @%_____	_____
Total Costs Incurred	
Fee @%_____ (if applicable)	_____
Total costs incurred and fee	_____
Credit (Explain)	_____
Recipient's share (if any)	_____
Government's share	_____

CERTIFICATION:

For Phase II Only:

I certify that this schedule is correct and in accordance with the terms of the agreement and that the costs included herein have been incurred, represent payments made by the Recipient except as otherwise authorized in the payments provisions of the agreement, and properly reflect the effort performed.

For Phase I and II:

I certify that the requirements on the amount of the funded research or analytical effort that must be performed by the small business have been met. The funded research or analytical effort is defined as the total requested funding minus the cost of any purchased or leased equipment, materials, and supplies (whether purchased by the grantee or a subcontractor). The requirements are as follows:

a. **SBIR:**

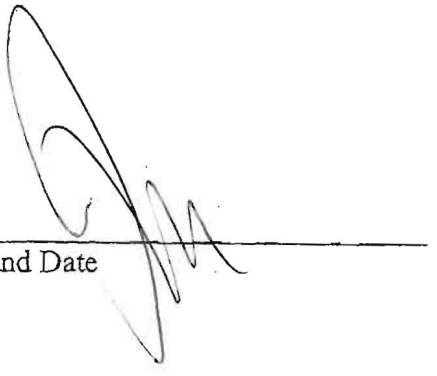
(1) Phase I: A minimum of two-thirds of the funded research or analytical effort must be performed by the grantee; a maximum of one-third of the effort may be performed by consultants or subcontractors.

(2) Phase II: A minimum of one-half of the research or analytical effort of Phase II must be performed by the grantee; up to one-half of the research or analytical effort may be performed by consultants or subcontractors.

b. **STIR:**

(1) Phase I: A minimum of 40% of the work must be performed by the small business and at least 30% of the work must be performed by the non-profit research institution partner. Such institutions include federally funded research and development centers, universities, teaching hospitals, and other non-profits. A minimum of 40% of the funding, excluding any purchased or leased equipment, materials, and supplies, must be allocated to the small business; a minimum of 30% of the funding, excluding any purchased or leased equipment, materials, and supplies, must be allocated to the research institution.

(2) Phase II: The same as STTR Phase I.



Signature and Date

Joseph J. James, Pres

Printed Name and Title

EXPLANATION: