

DRAFT PERMIT

PERMITTEE

Biomass Gas and Electric of Tallahassee, L.L.C.
3500 Parkway Lane, Suite 4000
Atlanta, Georgia 30092

Authorized Representative: Mr. Glenn Farris
President and Chief Executive Officer

Air Permit No. 0730109-001-AC
Tallahassee Renewable Energy Center
Biomass-fed Integrated Gasification Combined Cycle
Permit Expires: December 31, 2011
Initial Construction
Leon County

PROJECT AND LOCATION

This permit authorizes the construction of a nominal 42 megawatts (MWnet) biomass-fed integrated gasification and combined cycle power plant called the Tallahassee Renewable Energy Center. The facility will be located in Leon County along Lipona Road at Roberts Avenue in Tallahassee, Florida. The UTM coordinates are Zone 16, 757.34 km East, and 3369.8 km North.

STATEMENT OF BASIS

This air pollution construction permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and Chapters 62-4, 62-204, 62-210, 62-212, 62-296 and 62-297 of the Florida Administrative Code (F.A.C.). The permittee is authorized to conduct the proposed work in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department. This project is subject to the general preconstruction review requirements in Rule 62-212.300, F.A.C.

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Executed in Tallahassee, Florida

(DRAFT)

Joseph Kahn, Director
Division of Air Resource Management

(Date)

SECTION 2. ADMINISTRATIVE REQUIREMENTS (DRAFT)

FACILITY AND PROJECT DESCRIPTION

The proposed facility is a nominal 42 MW_{net} biomass-fed integrated gasification combined cycle (BIGCC) power plant called the Tallahassee Renewable Energy Center (TREC). The BIGCC unit will consist of:

- A biomass receiving, handling, storage and drying system;
- A biomass gasification system that yields biomass product gas (BPG) and char;
- A char combustor with sand and ash removal cyclones and a fabric filter baghouse;
- A BPG cleanup system that removes tar, particulate matter, and gaseous pollutants;
- Two nominal 14.8 MW_{gross} BPG-fueled Solar T-130 combustion turbine-electrical generators (CT);
- Two supplementary-fired heat recovery steam generators (HRSG) with BPG-fueled duct burners (DB);
- A flare system, cooling towers and an auxiliary boiler;
- Two CT/HRSG exhaust stacks and a char/tar combustor exhaust stack; and,
- A nominal 20.7 MW_{gross} steam turbine-electrical generator (STG).

Emissions of nitrogen oxides (NO_x) in each CT/DB exhaust (HRSG stack) will be reduced with a selective catalytic reduction (SCR) system and measured with a continuous emissions monitoring system (CEMS). A CEMS is also required for CO from each HRSG stack. A continuous opacity monitoring system (COMS) and a process monitor for CO are required for the char combustor exhaust stack.

This project creates the following new emissions units.

ID No.	Emission Unit Description
001	Biomass handling, storage and drying
002	Biomass gasifier with startup burner
003	Char combustor/olivine heater with startup burner and olivine handling equipment
004	Biomass product gas flare system
005	Biomass product gas cleanup system
006	Nominal 14.8 MW Solar Model No. T-130 BPG-fueled combustion turbine and duct-fired HRSG
007	Nominal 14.8 MW Solar Model No. T-130 BPG-fueled combustion turbine and duct-fired HRSG
008	Cooling towers
009	Auxiliary boiler with a maximum heat input rate of 62 MMBtu/hour from firing natural gas
010	Miscellaneous support systems

FACILITY REGULATORY CLASSIFICATION

- The facility is not a major source of hazardous air pollutants (HAP).
- The facility has units subject to the acid rain provisions of the Clean Air Act (CAA).
- The facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C.
- The facility is not a major stationary source as defined in Rule 62-210.200, F.A.C. and is not subject to Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.

REGULATED POLLUTANTS

The primary regulated pollutants emitted from this project are: carbon monoxide (CO), nitrogen oxides (NO_x), particulate matter (PM/PM₁₀), sulfur dioxide (SO₂), and volatile organic compounds (VOC). Small or negligible quantities of other pollutants will be emitted.

SECTION 2. ADMINISTRATIVE REQUIREMENTS (DRAFT)

1. Permitting Authority: The permitting authority for this project is the Bureau of Air Regulation, Division of Air Resource Management, Florida Department of Environmental Protection (Department). The Bureau of Air Regulation's mailing address is 2600 Blair Stone Road (MS #5505), Tallahassee, Florida 32399-2400. All documents related to applications for permits to operate an emissions unit shall be submitted to the Title V Section of the same office.
2. Compliance Authority: All documents related to compliance activities such as reports, tests, and notifications shall be submitted to the Air Resource Section of the Department's Northwest District Office at 160 Governmental Center, Suite 308, Pensacola, Florida 32502-5794. The telephone number of the district office is 850/595-8300. Copies of these documents shall also be submitted to the Northwest District's Branch Office at 630-3 Capital Circle NE, Tallahassee, Florida 32301. The telephone number of the branch office is 850/488-3704.
3. Appendices: The following Appendices are attached as part of this permit:
 - a. Appendix A. Citation Formats and Glossary of Common Terms;
 - b. Appendix B. General Conditions;
 - c. Appendix C. Common Conditions;
 - d. Appendix D. Common Testing Requirements;
 - e. Appendix E. Biomass Feedstock Properties and Control Plan;
 - f. Appendix F. NSPS – Standards of Performance Small Industrial Commercial-Institutional Steam Generating Units; and,
 - g. Appendix G. NSPS – Standards of Performance for Stationary Combustion Turbines.
4. Applicable Regulations, Forms and Application Procedures: Unless otherwise specified in this permit, the construction and operation of the subject emissions units shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403, F.S.; and Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296, and 62-297, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations.
5. New or Additional Conditions: For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]
6. Modifications: The permittee shall notify the Compliance Authority upon commencement of construction. No new emissions unit shall be constructed and no existing emissions unit shall be modified without obtaining an air construction permit from the Department. Such permit shall be obtained prior to beginning construction or modification. [Rules 62-210.300(1) and 62-212.300(1)(a), F.A.C.]
7. Source Obligation: At such time that a particular source or modification becomes a major stationary source or major modification (as these terms were defined at the time the source obtained the enforceable limitation) solely by virtue of a relaxation in any enforceable limitation which was established after August 7, 1980, on the capacity of the source or modification otherwise to emit a pollutant, such as a restriction on hours of operation, then the requirements of subsections 62-212.400(4) through (12), F.A.C., shall apply to the source or modification as though construction had not yet commenced on the source or modification. [Rule 62-212.400(12)(a), F.A.C.]
8. Application for Title V Permit: This permit authorizes construction of the permitted emissions units and initial operation to determine compliance with Department rules. A Title V air operation permit is required for regular operation of the permitted emissions unit. The permittee shall apply for a Title V air operation permit at least 90 days prior to expiration of this permit, but no later than 180 days after commencing operation. To apply for a Title V operation permit, the applicant shall submit the appropriate application form, compliance test results, and such additional information as the Department may by law require. The application shall be submitted to the appropriate Permitting Authority with copies to the Compliance Authority. [Rules 62-4.030, 62-4.050, 62-4.220 and Chapter 62-213, F.A.C.]

SECTION 2. ADMINISTRATIVE REQUIREMENTS (DRAFT)

9. Financial Assurance Required: Prior to commencement of construction, the permittee shall post a payment bond in favor of the State of Florida Department of Environmental Protection in the amount of two million dollars (\$2,000,000) to cover the cost of removal of all constructed facilities and equipment from the subleased premises as well as restoring the site to its original condition or conversion of the biomass energy production facility to another type of alternative energy production facility as required by the sublease agreement between the Florida State University Board of Trustees and the Permittee dated February 2, 2007. This bond may also be used at the discretion the Florida Department of Environmental Protection for the removal of any items from the site including but not limited to: wood, reagents such as ammonia, other fuels (including tars). [Rules 62-4.110, and 62-4.210(1)(c), F.A.C.]
10. Objectionable Odors Prohibited: No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor. [Rule 62-296.320(2), F.A.C.]
{Note: An objectionable odor is defined in Rule 62-210.200(Definitions), F.A.C., as any odor present in the outdoor atmosphere which by itself or in combination with other odors, is or may be harmful or injurious to human health or welfare, which unreasonably interferes with the comfortable use and enjoyment of life or property, or which creates a nuisance.}
11. Open Burning Prohibited: No person shall ignite, cause to be ignited, or permit to be ignited, any material which will result in any prohibited open burning as regulated by chapter 62-256, F.A.C.; nor shall any person suffer, allow, conduct or maintain any prohibited open burning. [Rule 62-256.300, F.A.C.]
12. Stack Design Requirement: Stacks shall be designed in accordance with the principles of good dispersion. Ambient dispersion modeling shall be conducted to insure that stack diameters, heights and placement are optimized with respect to physical features on the site and to insure compliance with the national ambient air quality standards. A stack design and dispersion analysis shall be provided to the Department upon completion of the front-end engineering design (FEED). [Rule 62-4.070(3)]
13. Facility-wide Emissions Report: The owner or operator shall submit an Annual Operating Report (AOR) for Air Pollutant Emitting Facility (DEP Form No. 62-210.900(5)) to the Department annually pursuant to subsection 62-210.370(3), F.A.C. Using the computation methods described in 62-210.370(2), F.A.C., the required AOR shall also include a demonstration that facility emissions of NO_x, CO, SO₂, VOC and PM/PM₁₀ are each less than 250 tons per year (TPY).

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

A. Biomass Handling, Storage and Drying (EU-001)

This section of the permit addresses the following emissions unit.

ID No.	Emission Unit Description
001	Biomass handling, storage and drying system

The feedstock will consist of woody biomass or crops that will be processed at a remote fuel preparation area (or areas) where it will be sorted, screened and chipped to size. The woody biomass and crop feedstock properties are given in Appendix E along with a plan for quality control. Deliveries will be made in shipments of approximately 100 railroad cars per shipment to the site approximately every 7 to 10 days. The railcars will be unloaded into a pit located under a new railroad siding where the fuel is conveyed, via a covered belt conveyor, to the fuel storage building. The fuel will be conveyed to an unfired dryer and then conveyed to the gasification process area.

EQUIPMENT

1. Equipment: The permittee is authorized to construct a biomass handling, storage and drying system consisting of the following equipment.
 - a. The railcar unloading system shall be covered and biomass unloaded from the bottom.
 - b. The emergency truck unloading system shall also be covered.
 - c. Belt conveyor systems #BC1 through #BC6 shall have totally enclosed head boxes, chutes and skirtboard systems to contain the fuel as well as prevent dust generation at the transfer points.
 - d. The biomass storage pile shall be covered to keep material dry and minimize dust.
 - e. The biomass dryer shall use thermal heat transfer (no additional combustion) to dry biomass prior to gasification.
 - f. The half-day storage/feeder bin shall be enclosed and include a spreader conveyor, a bin vent filter and a bottom screw feeder for unloading.
 - g. The bucket elevator shall be enclosed.
 - h. Baghouses: Based on the preliminary design, the permittee shall install the following baghouses.
 - 1) Baghouse #1 shall control dust from the transfer points and belts on the BC#1 and BC#2 conveyor systems as well as the railcar and truck unloading systems designed for a nominal flow rate of 1,000 standard cubic feet per minute (scfm) exhausted at ambient temperature.
 - 2) Baghouse #2 shall control dust from the transfer points and belts on the BC#3 through BC#6 conveyor systems and the bucket elevator designed for a nominal flow rate of 1,000 scfm exhausted at ambient temperature.
 - 3) Baghouse #3 shall control dust from the thermal heat transfer biomass dryer designed for a maximum volumetric flow rate of a nominal 110,000 scfm at approximately 175° F.Each baghouse shall be designed and maintained to achieve an outlet dust loading rate of 0.03 grains per dry standard cubic feet (gr/dscf) of exhaust. New and replacement bags shall meet this specification based on vendor information.
 - i. A bin vent filter shall control dust from the half day storage/feeder bin. The filter shall be designed and maintained to control at least 99.8% of the inlet dust loading designed for a nominal feed rate of 1,000 tons per day (TPD), wet basis. New and replacement filters shall meet this specification based on vendor information.

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

A. Biomass Handling, Storage and Drying (EU-001)

- j. Based on the final design needs, additional baghouses may be installed as necessary to control fugitive dust from material handling and storage. Should the preliminary design change, the permittee shall provide final design details for all baghouses in the application for a Title V air operation permit along with a concurrent modification of this air construction permit.

[Application No. 0730109-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

2. Circumvention: The permittee shall not circumvent the air pollution control equipment or allow the emission of air pollutants without this equipment operating properly. [Rule 62-210.650, F.A.C.]

PERFORMANCE RESTRICTIONS

3. Approximate Capacities: Each rail car will unload approximately 80 to 90 tons of biomass with an estimated moisture content of 30%. The covered storage area will hold approximately 10 to 14 days of feedstock (approximately 10,000 to 14,000 tons of wet biomass). The dryer will dry approximately 1000 tons per day (TPD) of wet biomass per day and the feeder will transfer approximately 730 tons of dry biomass feedstock to the gasifier. [Application No. 0730109-001-AC; and Rule 62-210.200(PTE), F.A.C.]
4. Restricted Operation: The hours of operation of are not limited (8,760 hours per year). [Application No. 0730109-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]
5. Objectionable Odor: The permittee shall handle, store and dry the biomass so as not to cause, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor. [Rule 62-296.320(2), F.A.C.]
6. Fuels: Municipal Solid Waste (MSW) is prohibited from use at this facility. The fuel shall consist of woody biomass as described in Appendix-E - Woody Biomass Feedstock Properties and Control Plan of this permit. Inspection and testing procedures describe in Appendix-E shall be followed to insure that appropriate woody biomass is used as fuel and that MSW is not used as fuel.

EMISSIONS STANDARDS

7. Opacity Standard: In accordance with EPA Method 9, visible emissions from any baghouse and vent filter shall not exceed 5% opacity based on a 6-minute average. [Rules 62-4.070(3) and 62-297.310(7)(c), F.A.C.]

TESTING AND MONITORING REQUIREMENTS

8. Initial Compliance Tests: As determined by EPA Method 9, the emissions unit shall be tested for 30 minutes to demonstrate initial compliance with the opacity standard within 60 days after achieving permitted capacity, but no later than 180 days after initial operation of the unit. [Rules 62-4.070(3) and 62-297.310(7)(a)1, F.A.C.]
9. Annual Compliance Tests: During each federal fiscal year (October 1st to September 30th), the emissions unit shall be tested in accordance with EPA Method 9 for 30 minutes to demonstrate compliance with the opacity standard. [Rule 62-297.310(7)(a)4, F.A.C.]
10. Test Requirements: The permittee shall notify the Compliance Authority in writing at least 15 days prior to any required tests. Tests shall be conducted in accordance with the applicable requirements specified in Appendix D (Common Testing Requirements) of this permit. [Rule 62-297.310(7)(a)9, F.A.C.]

RECORDS AND REPORTS

11. Test Reports: The permittee shall prepare and submit reports for all required tests in accordance with the requirements specified in Appendix D (Common Testing Requirements) of this permit. For each test run, the report shall also indicate the operating rate. [Rule 62-297.310(8), F.A.C.]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

B. Biomass Gasifier (EU-002)

This section of the permit addresses the following emissions unit.

ID No.	Emission Unit Description
002	Biomass gasifier with startup burner

The feedstock will be converted in the gasifier by pyrolysis to biomass product gas (BPG) in a circulating fluidized bed (CFB) of hot olivine (a special sand) and uses steam as the gasification medium. During the process, the olivine cools and the biomass feed breaks down to produce BPG including tar, char and ash. Cooled olivine and char are captured in the gasifier cyclones and returned to the char combustor to support combustion and reheat the olivine. The BPG from the gasifier cyclone is cooled in a heat exchanger and then cleaned as described in EU 005 or flared as described in EU 004.

EQUIPMENT

1. Equipment: The permittee is authorized to construct a gasifier consisting of the following equipment: CFB gasifier vessel; natural gas-fueled startup burner; and cyclones.
[Application No. 0730109-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]
2. Cyclone Separators: One cyclone separator shall be designed, installed and maintained to remove char and olivine from the raw BPG and recirculate it to the char combustor for combustion of the char and reheating of the olivine. Another cyclone separator shall be designed and maintained to remove remaining coarse solids ash prior to BPG cleanup or flaring.
[Application No. 0730109-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

PERFORMANCE RESTRICTIONS

3. Gasifier Capacity: The nominal gasifier feed capacity is 730 tons per day of dry biomass feedstock.
[Application No. 0730109-001-AC and Rule 62-210.200(PTE), F.A.C.]
4. Gasifier Startup Burner Capacity: The nominal heat input rating of the natural gas-fueled startup burner is 25 mmBtu per hour. [Application No. 0730109-001-AC]
5. Restricted Operation: The hours of operation of the gasifier are not limited (8,760 hours per year). The gasifier startup burner may be used only for the purpose of starting up the gasifier.
[Application No. 0730109-001-AC and Rule 62-210.200(PTE), F.A.C.]
6. Fuel: Other than the natural gas for the start-up burner, only woody biomass as described in Appendix - E- Woody Biomass Feedstock Properties and Control Plan, shall be used as fuel. Municipal Solid Waste is prohibited from use at this facility.
7. Material Storage: Operational procedures to minimize spontaneous combustion for storage of woody biomass materials shall be used and include the following:
 - a. Incoming unprocessed materials shall be stored in windrows or piles with a clear area around each pile that is equal to the height of the pile;
 - b. Mixing new material with older material on the site shall be avoided, and an area shall be thoroughly cleaned before starting a new pile;
 - c. Storage sites shall be level and on firm ground;
 - d. Temperatures of storage piles shall be monitored;
 - e. Concentrations of fine materials during pile build-up shall be avoided; and
 - f. Pile compaction shall be avoided.[Rule 62-4.070(3), F.A.C.]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

B. Biomass Gasifier (EU-002)

NSPS APPLICABILITY

8. NSPS Subpart Dc Applicability: The gasifier startup burner is subject to all applicable requirements of 40 CFR 60, Subpart Dc which applies to Small Industrial, Commercial or Institutional Boiler. Specifically, each emission unit shall comply with 40 CFR60.48c Reporting and Recordkeeping Requirements. The applicable conditions are given in Appendix F. [Rule 62-204.800(7)(b) and 40 CFR 60, NSPS-Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units].

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

C. Char Combustor (EU-003)

This section of the permit addresses the following emissions unit.

ID No.	Emission Unit Description
003	Char combustor/olivine heater with startup burner and olivine handling equipment

Olivine and char captured in the gasifier cyclones and tars (returned from downstream BPG cleaning system) are fed to the char combustor. Air is introduced at the bottom of the vessel and supports combustion of the char and tars in a circulating fluidized bed (CFB) of olivine. Heated olivine is captured in the char combustor cyclones and returned to the gasifier to affect pyrolysis. Exhaust gas from the char combustor passes through a olivine cyclone and a hot ash cyclone, is cooled in a heat exchanger and then filtered in a baghouse.

EQUIPMENT

- Equipment:** The permittee is authorized to construct a char combustor/olivine heater system consisting of the following equipment: Olivine storage silo; CFB char combustor vessel; natural gas-fueled startup burner; cyclones and a fabric filter baghouse.
[Application No. 0730109-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]
- Cyclone Separators:** One cyclone separator shall be designed, installed and maintained to remove the heated olivine from the char combustor exhaust and recycle it back to the gasifier (EU 001). Another cyclone separator shall be designed, installed and maintained to remove most of the hot gasification ash prior to further particulate removal in one of the fabric filter baghouses described below.
[Application No. 0730109-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]
- Baghouses:** The permittee shall install and maintain the following baghouses.
 - Exhaust from the olivine storage silo shall be controlled by a baghouse designed and maintained to limit PM/PM₁₀ emissions to 0.015 grains per standard cubic feet (gr/dscf) or better.
 - Exhaust from the second char combustor cyclone (ash) separator shall be further controlled by a separate baghouse designed and maintained to 0.015 gr/dscf or better.

Exhaust from these baghouses discharges directly to the ambient air. New and replacement bags shall meet these specifications based on vendor information. Should the preliminary design change, the permittee shall provide final design details for all baghouses and controls in the application for a Title V air operation permit along with a concurrent modification of this air construction permit.

[Application No. 0730109-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

- Circumvention:** The permittee shall not circumvent the air pollution control equipment or allow the emissions of air pollutants without this equipment operating properly. [Rule 62-210.650, F.A.C.]

PERFORMANCE RESTRICTIONS

- Char Combustor Capacity:** The nominal heat input rating of the char combustor is 124 mmBtu per hour.
[Application No. 0730109-001-AC and Rule 62-210.200(PTE), F.A.C.]
- Char Combustor Startup Burner Capacity:** The nominal heat input rating of the natural gas-fueled startup combustor is 17 mmBtu per hour. [Application No. 0730109-001-AC]
- Restricted Operation:** The hours of operation of the char combustor are not limited (8,760 hours per year). The char combustor startup burner may be used only for the purpose of starting up the char combustor.
[Application No. 0730109-001-AC and Rule 62-210.200(PTE), F.A.C.]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

C. Char Combustor (EU-003)

NSPS APPLICABILITY

8. NSPS Subpart Dc Applicability: The char combustor startup burner is subject to all applicable requirements of 40 CFR 60, Subpart Dc which applies to Small Industrial, Commercial or Institutional Boiler. Specifically, each emission unit shall comply with 40 CFR60.48c, Reporting and Recordkeeping Requirements. The applicable requirements are given in Appendix F. [Rule 62-204.800(7)(b) and 40 CFR 60, NSPS-Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units].

EMISSIONS STANDARDS

9. Visible Emissions Standard – Char Combustor: In accordance with EPA Method 9, visible emissions from the char combustor baghouse shall not exceed 10% opacity on a 6-minute average as measured by a continuous emissions monitoring system (COMS). [Rules 62-4.070(3)]
10. Visible Emissions – Other Baghouses: In accordance with EPA Method 9, visible emissions from other baghouses in this section shall not exceed 5% opacity based on a 6-minute average. [Rules 62-4.070(3) and 62-297.310(7)(c), F.A.C.]
11. Particulate emission (PM/PM₁₀) standard: PM/PM₁₀ emissions from the char combustor shall not exceed 10.0 pounds per hour (lb/hr) as demonstrated by initial and annual compliance tests. [Application No. 0730109-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]
12. Nitrogen Oxides (NO_x) standard: NO_x emissions from the char combustor shall not exceed 10.0 lb/hr as demonstrated by initial and annual compliance tests. [Application No. 0730109-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]
13. Carbon monoxide (CO) standard: Emissions of CO from the char combustor exhaust stack shall not exceed 10.0 lb/hr as demonstrated by initial and annual compliance tests. In addition, three quarterly compliance tests shall be conducted between the initial compliance test and the first annual compliance test. [Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]
14. Dioxin/furan: Dioxin/furan emissions shall meet a design value of 0.15 toxic equivalent nanograms/dry standard cubic meter at 7% oxygen (TEQ ng/dscm @7% O₂) demonstrated by an initial compliance test no later than 180 days after initial operation. Thereafter an annual compliance test shall be performed during each federal fiscal year (October 1st to September 30th) to show that the dioxin/furan standard is met. If exceeded during the initial compliance test, the applicant shall: design and install an activated carbon injection system; or modify the char combustor, its riser, duct work, temperature controls, heat exchanger or baghouse; or make other process changes within 180 days of the failed test as necessary to meet the design value. [Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

TESTING AND MONITORING REQUIREMENTS

15. COMS: A continuous opacity monitoring system (COMS) shall be installed, calibrated, operated, and maintained in the char combustor exhaust stack, after the baghouse, in a manner sufficient to demonstrate continuous compliance with the opacity standards specified in this section. Opacity shall be based on a 6-minute block average computed from at least one observation (measurement) every 15 seconds. For the COMS, the 6-minute block averages shall begin at the top of each hour. [Rule 62-4.070(3), F.A.C.]
16. COMS Certification: The COMS required by this permit shall be installed prior to startup. Within 60 calendar days of achieving the first gasifier startup, the owner or operator shall certify the COMS. Upon certification of the COMS, the owner or operator shall demonstrate compliance with all applicable standards as specified in this permit. [Rule 62-4.070(3)]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

C. Char Combustor (EU-003)

- 17. CO Process Monitor: At least one process monitor shall be installed at an appropriate point between the ash cyclone and the exhaust stack to continuously monitor CO content in the process gases to enable the operator to properly operate the unit while minimizing emissions of CO, opacity, PM/PM₁₀ and D/F. The data from the process monitors shall be available at the facility for Department inspection and in a suitable engineering format such as parts per million by volume (ppmv). The process monitor data shall be used in conjunction with the annual stack test data to calculate annual emissions as required in Section 2, Specific Condition 13. [62-4.070(3), F.A.C.]
- 18. Visible Emissions Compliance Tests: The olivine silo baghouse shall be tested for 30 minutes to demonstrate initial compliance with the opacity standard within 60 days after achieving permitted capacity, but no later than 180 days after initial operation of the unit. During each federal fiscal year (October 1st to September 30th), the emissions unit shall be tested in accordance with EPA Method 9 for 30 minutes to demonstrate compliance with the opacity standard. [Rules 62-4.070(3) and 62-297.310(7)(a)1, F.A.C.]
- 19. CO, PM/PM₁₀, NO_x and Dioxin/Furan Compliance Tests: The char combustor exhaust stack shall be tested to demonstrate initial compliance with the CO, PM/PM₁₀, NO_x and dioxin/furan standards no later than 180 days after initial operation. During each federal fiscal year (October 1st to September 30th), the char combustor shall be tested to demonstrate compliance with the CO, PM/PM₁₀, NO_x and dioxin/furan standards. [Rule 62-4.070(3), F.A.C.]
- 20. Test Requirements: The permittee shall notify the Compliance Authority in writing at least 15 days prior to any required tests. Tests shall be conducted in accordance with the applicable requirements specified in Appendix D (Common Testing Requirements) of this permit. [Rule 62-297.310(7)(a)9, F.A.C.]
- 21. Test Methods: Any required stack tests shall be performed in accordance with the following methods.

Method	Description of Method and Comments
EPA 1 - 4	Determination of Traverse Points, Velocity and Flow Rate, Gas Analysis and Moisture Content. Methods shall be performed as necessary to support other methods.
EPA 5	Determination of Particulate Emissions. The minimum sample volume shall be 30 dry standard cubic feet.
EPA 7E	Determination of NO _x Emissions (Instrumental). NO _x emissions testing shall be conducted with the air heater operating at the highest heat input possible during the test.
EPA 9	Visual Determination of Opacity.
EPA 10	Measurement of Carbon Monoxide Emissions (Instrumental). The method shall be based on a continuous sampling train.
EPA 23	Measurement of Dioxin/Furan Emissions.

RECORDS AND REPORTS

- 22. Test Reports: The permittee shall prepare and submit reports for all required tests in accordance with the requirements specified in Appendix D (Common Testing Requirements) of this permit. For each test run, the report shall also indicate the operating rate. [Rule 62-297.310(8), F.A.C.]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

D. Flare System (EU-004)

This section of the permit addresses the following emissions unit.

ID No.	Emission Unit Description
004	Biomass product gas flare systems

Raw BPG from the biomass gasifier (EU-002) may be flared to the extent necessary and not sent to the BPG cleanup system (EU-005). Cleaned, sweetened BPG from the cleanup system may be flared to the extent necessary and not further processed for use in the combustion turbines or duct burners (EU 006 and 007).

EQUIPMENT

1. Equipment: The permittee is authorized to construct two BPG flare systems, including one for the raw BPG and one for cleaned BPG, with continuous pilots and combustion chambers to destroy unused BPG. The presence of a flare pilot flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame.
[Application No. 0730109-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

PERFORMANCE RESTRICTIONS

2. Approximate Capacities: Each flare system is designed to combust biomass product gas with a nominal heat input rate of 150 mmBtu per hour. Natural gas may be used as fuel for the pilots.
[Application No. 0730109-001-AC and Rule 62-210.200(PTE), F.A.C.]
3. Restricted Operation: Although the hours of operation of are not limited, the flare systems shall only be used to flare BPG gas during startup, planned shutdown, and emergency shutdown (e.g. combustion turbine, duct burner or gasifier trip).
[Application No. 0730109-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

RECORDS AND REPORTS

4. Records: The permittee shall record in a written log the duration of each flare event and the reason for flaring. If requested by the Compliance Authority, the permittee shall provide a copy of these records or a summary of these records. [Rule 62-4.070(3), F.A.C.]
5. Work Practice: Good combustion practices will be utilized at all times to ensure emissions from the gasifier/combustor, associated burners and flare system are minimized. Therefore, all operators and supervisors shall be properly trained to operate and ensure maintenance of these systems in accordance with the guidelines and procedures established by each manufacturer. The training shall include good operating practices as well as methods for minimizing excess emissions. The flare pilots shall be operated with a flame present at all times. The presence of a flare pilot flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame.
[Rules 62-4.070(3) F.A.C.]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

E. Biomass Product Gas Cleanup System (EU-005)

This section of the permit addresses the following emissions unit.

ID No.	Emission Unit Description
005	BPG cleanup consisting of specialized oil scrubbers, an aqueous scrubber with a caustic section and an absorption system designed to concentrate hydrogen (H ₂) from a slipstream of the product gas.

The cooled raw BPG from the gasifier/coarse solids cyclone (EU-002) is treated to remove tars and finer particles in an oil-based gas washer. Tars are returned to support combustion in the char combustor (EU-003). Removal of NH₃, H₂S and hydrogen chloride (HCl) will be accomplished in a wet scrubber that will include a section that will scrub H₂S using caustic soda (NaOH). Cooled, sweetened, and cleaned BPG is then compressed or boosted for delivery to the combustion turbines/duct burners (EU-006 and 007), flared (EU-004) or further treated to provide a hydrogen (H₂) gas stream to Florida State University (FSU).

EQUIPMENT

1. Equipment: The permittee is required to construct a BPG cleanup system consisting of the following equipment.
 - a. A two-stage scrubber that utilizes specialized oils and is designed to remove heavy tars in the first stage and light tars in the second stage. The heavy and light tars are then recycled back to the char combustor.
 - b. An aqueous scrubber that is designed to remove inorganic impurities.
 - c. An absorption system that is designed to concentrate H₂ from a slipstream of BPG. The H₂ gas stream will be transported by pipeline to a FSU research facility. The off-gas from the slipstream will be blended back with the BPG and sent to the power generation systems for use as a fuel.

None of the control systems discharge directly to the ambient air.
[Application No. 0730109-001-AC and Rules 62-4.070(3), F.A.C.]

TAR HANDLING AND STORAGE

2. Tars shall be continuously returned to the char combustor and not accumulated, stored or disposed.

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

F. Combustion Turbines and Duct Burners (EU-006, EU-007)

This section of the permit addresses the following emissions units.

ID No.	Emission Unit Description
006	One nominal 14.8 MW BPG-fueled Solar T-130 CT and supplementary-fired HRSG with a nominal 28 mmBtu/hour BPG-fueled DB. Steam from in the HRSG is used in the shared nominal 20.7 MW STG.
007	One nominal 14.8 MW BPG-fueled Solar T-130 CT and supplementary-fired HRSG with a nominal 28 mmBtu/hour BPG-fueled DB. Steam from in the HRSG is used in the shared nominal 20.7 MW STG.

EQUIPMENT

- CT:** The permittee is authorized to install, tune, operate and maintain a combined cycle combustion turbine system consisting of the following equipment: two nominal 14.8 MW BPG-fueled Solar T-130 CT; two inlet air filtration systems; two automated CT control systems; two HRSG with BPG-fueled DB systems; two HRSG stacks; and a shared nominal 20.7 MW steam turbine-electrical generator. Natural gas will be used during commissioning and during startups, malfunctions and shutdowns.
[Application No. 0730109-001-AC]
- SCR Systems:** The permittee shall install an SCR system for each CT/HRSG exhaust stream to control NO_x emissions and further assist in dioxin and furan destruction. Each SCR system will consist of an ammonia injection grid, catalyst, ammonia storage, monitoring and control system, electrical, piping and other ancillary equipment. Each SCR system shall be designed, constructed and operated to achieve the permitted levels of NO_x emissions. The SCR system shall be designed to achieve a maximum ammonia slip level of 10 ppmvd @ 15% oxygen.
{Permitting Note: In accordance with 40 CFR 60.130, the storage of ammonia shall comply with all applicable requirements of the Chemical Accident Prevention Provisions in 40 CFR 68.}
[Application No. 0730109-001-AC and Rule 62-4.070(3), F.A.C.]
- Circumvention:** The permittee shall not circumvent the air pollution control equipment or allow the emission of air pollutants without this equipment operating properly. Ammonia shall be injected as necessary to ensure compliance with the permitted levels of NO_x emissions specified in this permit.
[Rules 62-210.650 and Rule 62-4.070(3), F.A.C.]
- NO_x CEMS:** In accordance with §60.4335(b) and §60.4345, the permittee shall install, calibrate, operate and maintain a CEMS to continuously monitor and record NO_x emissions and from each combustion turbine exhaust. [Application No. 0730109-001-AC; Rule 62-4.070(3), F.A.C.; and Subpart KKKK in 40 CFR 60]
- CO CEMS:** The permittee shall install, calibrate, operate and maintain a CEMS to continuously monitor and record CO emissions and from each combustion turbine exhaust.
[Application No. 0730109-001-AC; Rule 62-4.070(3), F.A.C.]

PERFORMANCE RESTRICTIONS

- Authorized Fuels:** The only authorized fuels for the combustion turbines and duct burner systems are:
 - Product gas from the BPG cleanup system containing no more than 0.02% sulfur by volume, 30-operating-day basis.
 - Natural gas containing no more than 20 grains of sulfur per 100 standard cubic feet (gr S/100 SCF).
{Permitting Note: only BPG can be burned in the DB, natural gas cannot be used}
[Application No. 0730109-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

F. Combustion Turbines and Duct Burners (EU-006, EU-007)

7. Permitted Capacities:

- a. *CT*: The nominal heat input rating of each CT is 147 mmBtu/hour. This rate is based on a compressor inlet temperature of 59 °F, International Organization for Standardization (ISO) conditions, and the lower heating value (LHV) of the BPG or natural gas. Heat input rates will vary depending upon combustion turbine characteristics, ambient conditions, alternate methods of operation and evaporative cooling. The permittee shall provide manufacturer’s performance curves (or equations) that correct for site conditions to the Permitting and Compliance Authorities within 45 days of completing the initial compliance testing. Operating data may be adjusted for the appropriate site conditions in accordance with the performance curves and/or equations on file with the Department.
- b. *DB Systems*: The nominal heat input rating of each DB located within each HRSG is 28 mmBtu per hour based on the LHV of BPG.

The estimated LHV is 435 Btu/scf for BPG and 980 Btu/scf for natural gas.
 [Application No. 0730109-001-AC and Rule 62-210.200(PTE), F.A.C.]

- 8. **Restricted Operation**: Each CT shall use no more than 112.5 MMscf of natural gas during any consecutive 12 month period (equivalent to 750 hours of firing natural gas at permitted capacity). The hours of operation are not otherwise limited (8,760 hours per year).
 [Application No. 0730109-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]
- 9. **Authorized Method of Operation**: Both CT are permitted to operate only as part of a combined cycle system. [Application No. 0730109-001-AC]

NSPS APPLICABILITY

- 10. **NSPS Subpart KKKK Applicability**: The CT and associated DB are subject to all applicable requirements of 40 CFR 60, Subpart KKKK - Standards of Performance for Stationary Combustion Turbines which applies to combustion turbines and duct burners constructed after February 18, 2005.
 [Rule 62-204.800(7)(b), F.A.C. and 40 CFR 60.4300, NSPS - Subpart KKKK - Standards of Performance for Stationary Combustion Turbines (see Appendix G)].

EMISSION LIMITS

- 11. **Emission Standards**: The following standards are at least as stringent as the Subpart KKKK limits described in Condition 10 above and in Appendix G of this permit. They also include more stringent limits to insure that the facility PSD-pollutant emissions are less than the respective major stationary source thresholds. Emissions from the CT/HRSG system shall not exceed the following standards.

Pollutant	Method of Operation	Initial/Annual Stack Test 3-Run Average		CEMS-Based Averages ^h	
		ppmvd ^a	lb/hr ^g	ppmvd ^a	lb/hr
CO ^b	CT (BPG)	50.0	17.2	50.0, 30 days rolling	N/A
	CT & DB (BPG)	50.0	21.4		
	CT (NG)	NA	12.1	N/A	
	CT All Modes	N/A	21.4	N/A	21.4, 12-month rolling, rolled monthly

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

F. Combustion Turbines and Duct Burners (EU-006, EU-007)

Pollutant	Method of Operation	Initial/Annual Stack Test 3-Run Average		CEMS-Based Averages ^h	
		ppmvd ^a	lb/hr ^g	ppmvd ^a	lb/hr
NO _x ^c	CT (BPG)	32.5	17.2	32.5 30 days rolling ^g	N/A
	CT & DB (BPG)	32.5	19.2		
	CT (NG)	25.0	8.8	25.0 30 day rolling ^h	
	CT All Modes			N/A	19.2 lb/hr 12-months rolling, rolled monthly
PM/PM ₁₀ ^d	All Modes	N/A	10.0	N/A	
		Fuel Specification: 20 gr S/100 SCF in NG and 0.02% S in BPG			
		Visible emissions shall not exceed 10% opacity for each 6-minute block average.			
SAM/SO ₂ ^e	All Modes	20 gr S/100 SCF in NG and 0.02% S in BPG ^h			
Ammonia ^f	CT, All Modes	10	NA	NA	

- a. Parts per million by volume dry corrected to 15% oxygen
- b. Continuous compliance with the 30 day rolling average CO standard shall be demonstrated based on data collected by the required continuous emissions monitoring system (CEMS). The initial and annual EPA Method 10 tests associated with the certification of the CEMS instruments shall also be used to demonstrate compliance with the individual standards for normal BPG and the DB modes. The twelve month mass emission rate values rolled monthly determined by data collected by the CEMS shall be used to demonstrate yearly emission limits in tons per year (tpy) proving avoidance of PSD.
- c. The initial and annual EPA Method 7E or Method 20 tests associated with demonstration of compliance with 40 CFR 60, Subpart KKKK or certification of the CEMS instruments shall also be used to demonstrate compliance with the individual standards for normal BPG and duct burner modes during the time of those tests. NO_x mass emission rates are defined as oxides of nitrogen expressed as nitrogen dioxide (NO₂). Continuous compliance with the 30 day rolling average NO_x standards shall be demonstrated based on data collected by the required CEMS. Twelve month mass emission rate values rolled monthly determined by data collected by the CEMS shall be used to demonstrate yearly emission limits in tons per year (tpy) proving avoidance of PSD.
- d. After the initial compliance test the sulfur fuel specification combined with the efficient combustion design and operation of the CT shall indicate compliance. Compliance with the fuel specifications, CO standards, and visible emissions standards shall serve as indicators of good combustion. Compliance with the fuel specifications shall be demonstrated by keeping records of the fuel sulfur content. Compliance with the visible emissions standard shall be demonstrated by conducting tests in accordance with EPA Method 9.
- e. The fuel sulfur specification effectively limits the potential emissions of SAM and SO₂ from the CT. Compliance with the fuel sulfur specifications shall be determined by the ASTM methods for determination of fuel sulfur or by fuel supplier/vendor reports as detailed in the draft permit.
- f. Compliance with the ammonia slip standard shall be demonstrated by conducting tests in accordance with EPA Method CTM-027 or EPA Method 320.
- g. The mass emission rate standards are based on a turbine inlet condition of 59 °F, evaporative cooling on, and using the HHV of the fuel. Mass emission rate may be adjusted to actual test conditions in accordance with the performance curves and/or equations on file with the Department.

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

F. Combustion Turbines and Duct Burners (EU-006, EU-007)

- h. CEMS monitoring compliance shall in accordance with the 40 CFR 60, NSPS, Subpart KKKK for NO_x and SO₂ as described in 60.4380(b)(1).

[Application No. 0730109-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

12. Ammonia Slip: Each SCR system shall be designed to achieve a maximum ammonia slip of 10 ppmvd @ 15% oxygen. Actual ammonia slip levels shall not exceed 10 ppmvd @ 15% oxygen as determined by EPA Method CTM-027 based on the average of three test runs. If tests indicate an ammonia slip level greater than 10 ppmvd @ 15% oxygen, the permittee shall:
- Begin testing and reporting the ammonia slip for each subsequent calendar quarter;
 - Before the ammonia slip exceeds 10 ppmvd corrected to 15% oxygen, take corrective actions that result in lowering the ammonia slip to less than 10 ppmvd corrected to 15% oxygen; and
 - Test and demonstrate that the ammonia slip is less than 10 ppmvd corrected to 15% oxygen within 45 days after completing the corrective actions.

Corrective actions may include, but are not limited to, adding catalyst, replacing catalyst, or other SCR system maintenance or repair. After demonstrating that the ammonia slip level is less than 10 ppmvd corrected to 15% oxygen, testing and reporting shall resume on an annual basis.

[Rules 62-4.070(3) and 62-297.310(7)(b), F.A.C.]

EXCESS EMISSIONS

13. Definitions Related to Excess Emissions: Rule 62-210.200(Definitions), F.A.C. defines the following terms.
- Startup* is defined as the commencement of operation of any emissions unit which has shut down or ceased operation for a period of time sufficient to cause temperature, pressure, chemical or pollution control device imbalances, which result in excess emissions.
 - Shutdown* is the cessation of the operation of an emissions unit for any purpose.
 - Malfunction* is defined as any unavoidable mechanical and/or electrical failure of air pollution control equipment or process equipment or of a process resulting in operation in an abnormal or unusual manner.
14. Excess Emissions Prohibited: Excess emissions caused entirely or in part by poor maintenance, poor operation or any other equipment or process failure that may reasonably be prevented during startup, shutdown or malfunction shall be prohibited. All such preventable emissions shall be included in any compliance determinations based on CEMS data. [Rule 62-210.700(4), F.A.C.]
15. Excess Emissions Calculations: The following conditions apply only to the SIP-based emissions standards specified above in this subsection. Rule 62-210.700, F.A.C. (Excess Emissions) cannot vary or supersede any federal NSPS, NESHAP, or Acid Rain provision. As provided by the authority in Rule 62-210.700(5), F.A.C., the following conditions supersede the provisions in Rule 62-210.700(1), F.A.C.
- CO Emissions Standards*: No excess emissions provisions are made for excess CO emissions.
 - NO_x Emissions*: Excess NO_x emissions based on the 30-day rolling average standard shall be calculated in accordance with the NSPS Subpart KKKK provisions. NO_x emissions in excess of the 12-month rolling total are not allowed.
 - Opacity*: As determined by EPA Method 9, visible emissions from each combustion turbine during startup and shutdown shall not exceed 20% opacity based on 6-minute averages. Excess visible emissions resulting from malfunction shall be permitted providing: (1) best operational practices to minimize emissions are adhered to, and (2) the duration of excess emissions shall be minimized but in no case exceed two hours in any 24-hour period.

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

F. Combustion Turbines and Duct Burners (EU-006, EU-007)

GENERAL COMPLIANCE REQUIREMENTS

MONITORING

16. Fuel Sulfur Monitoring: The permittee shall conduct the following monitoring to demonstrate compliance with the fuel sulfur specifications.
- For BPG, the permittee shall monitor the fuel sulfur content in accordance with the provisions of Section 60.4370 in NSPS Subpart KKKK of 40 CFR 60. In addition, the permittee shall sample and analyze the BPG for the heating value at least once per week.
 - For natural gas, the permittee shall either obtain reliable fuel sulfur data from the natural gas pipeline vendor or analyze a monthly sample of natural gas for the fuel sulfur content.

[Application No. 0730109-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

RECORDS AND REPORTS

17. Monitoring of Capacity: The permittee shall monitor and record the operating rate of each combustion turbine on a daily average basis, considering the number of hours of operation during each day (including the times of startup, shutdown and malfunction). This shall be achieved through monitoring daily rates of consumption and heat content of each allowable fuel in accordance with the provisions of Appendix D in 40 CFR 75 and recording the data using a monitoring component of the CEMS system required above. [Rule 62-4.070(3), F.A.C. and 40 CFR 75]
18. Monthly Operations Summary: By the fifth calendar day of each month, the permittee shall record the following for each fuel in a written or electronic log for the previous month and the previous consecutive 12 months: total heat input rate to the combustion turbine from each fuel (MMBtu); the total heat input rate to the duct burner (MMBtu); and the 12-month rolling total of NO_x emissions (tons). Annual NO_x emissions shall be determined in accordance with Rule 62-210.370, F.A.C., which is included in Appendix C of this permit. Information recorded and stored as an electronic file shall be available for inspection and printing within at least three days of a request by the Department. Fuel consumption shall be monitored in accordance with the provisions of Appendix D in 40 CFR 75. [Rules 62-4.070(3), F.A.C.]
19. Stack Test Reports: The owner or operator of an emissions unit for which a compliance test is required shall file a report with the Compliance Authority on the results of each such test. The required test report shall be filed with the Compliance Authority as soon as practical but no later than 45 days after the last sampling run of each test is completed. The test report shall provide sufficient detail on the emissions unit tested and the test procedures used to allow the Compliance Authority to determine if the test was properly conducted and the test results properly computed. As a minimum, the test report shall provide the applicable information specified in Rule 62-297.310(8), F.A.C. and summarized in Appendix D. [Rule 62-297.310(8), F.A.C.]

PERFORMANCE TESTS TEST

20. Initial Compliance Tests: The combustion turbines shall be tested to demonstrate initial compliance with the emissions standards for PM/PM₁₀, opacity and ammonia slip. The initial tests shall be conducted within 60 days after achieving permitted capacity, but not later than 180 days after initial operation of the unit. The combustion turbines shall demonstrate compliance with the NO_x standard in accordance with the methods specified in NSPS Subpart KKKK of 40 CFR 60. [Rules 62-4.070(3) and 62-297.310(7)(a)1, F.A.C.]
21. Annual Compliance Tests: During each federal fiscal year (October 1st to September 30th), the combustion turbines shall be tested to demonstrate compliance with the emissions standards for opacity and ammonia slip. The combustion turbines shall demonstrate compliance with the NO_x standard in accordance with the methods specified in NSPS Subpart KKKK of 40 CFR 60. [Rule 62-297.310(7)(a)4, F.A.C.]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

F. Combustion Turbines and Duct Burners (EU-006, EU-007)

22. **Test Requirements:** The permittee shall notify the Compliance Authority in writing at least 15 days prior to any required tests. Tests shall be conducted in accordance with the applicable requirements specified in Appendix D (Common Testing Requirements) of this permit. [Rule 62-297.310(7)(a)9, F.A.C.]
23. **Test Methods:** Required tests shall be performed in accordance with the following reference methods.

Method	Description of Method and Comments
1-4	Traverse Points, Velocity and Flow Rate, Gas Analysis, and Moisture Content
7E	Determination of NO _x Emissions from Stationary Sources.
9	Visual Determination of the Opacity of Emissions from Stationary Sources.
10	Determination of CO Emissions from Stationary Sources The method shall be based on a continuous sampling train.
19	Determination of SO ₂ Removal Efficiency and PM, SO ₂ and NO _x Emission Rates Optional F-factor method may be used to determine flow rate and gas analysis to calculate mass emissions in lieu of Methods 1-4.
CTM-027	Procedure for Collection and Analysis of Ammonia in Stationary Source.

The above methods are described in Appendix A of 40 CFR 60 and are adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used unless prior written approval is received from the Department. [Rules 62-204.800 and 62-297.100, F.A.C.; and Appendix A of 40 CFR 60]

CONTINUOUS MONITORING REQUIREMENTS

24. **CEMS:** The permittee shall install, calibrate, maintain and operate CEMS and a diluent monitor to measure and record the emissions of CO and NO_x from each CT in a manner sufficient to demonstrate continuous compliance with the CEMS emission standards of this section. Each monitoring system shall be installed, calibrated and properly functioning within 60 calendar days of achieving permitted capacity as defined in Rule 62-297.310(2), F.A.C., but no later than 180 calendar days after initial startup and prior to the initial performance tests. Within one working day of discovering emissions in excess of a CO or NO_x standard (and subject to the specified averaging period), the permittee shall notify the Compliance Authority.
- CO Monitor:** The CO monitor shall be certified pursuant to 40 CFR 60, Appendix B, Performance Specification 4 or 4A. Quality assurance procedures shall conform to the requirements of 40 CFR 60, Appendix F, and the Data Assessment Report of Section 7 shall be made each calendar quarter, and reported semiannually to the Compliance Authority. The RATA tests required for the CO monitor shall be performed using EPA Method 10 in Appendix A of 40 CFR 60 and shall be based on a continuous sampling train. The CO monitor span values shall be set appropriately, considering the allowable methods of operation and corresponding emission standards.
 - NO_x Monitor:** The NO_x monitor shall be certified, operated, and maintained in accordance with the requirements of 40 CFR 75. Record keeping and reporting shall be conducted pursuant to Subparts F and G in 40 CFR 75. The RATA tests required for the NO_x monitor shall be performed using EPA Method 20 or 7E in Appendix A of 40 CFR 60.
 - Diluent Monitor:** The oxygen (O₂) or carbon dioxide (CO₂) content of the flue gas shall be monitored at the location where CO and NO_x are monitored to correct the measured emissions rates to 15% oxygen. If a CO₂ monitor is installed, the oxygen content of the flue gas shall be calculated using F-factors that are appropriate for the fuel fired. Each monitor shall comply with the performance and quality assurance requirements of 40 CFR 75.

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

F. Combustion Turbines and Duct Burners (EU-006, EU-007)

25. CEMS Data Requirements:

- a. *Data Collection:* Emissions shall be monitored and recorded at all times including startup, operation, shutdown and malfunction except for continuous monitoring system breakdowns, repairs, calibration checks and zero and span adjustments. The CEMS shall be designed and operated to sample, analyze, and record data evenly spaced over an hour. If the CEMS measures concentration on a wet basis, the CEM system shall include provisions to determine the moisture content of the exhaust gas and an algorithm to enable correction of the monitoring results to a dry basis (0% moisture). Alternatively, the owner or operator may develop through manual stack test measurements a curve of moisture contents in the exhaust gas versus load, and use these typical values in an algorithm to enable correction of the monitoring results to a dry basis (0% moisture). Final results of the CEMS shall be expressed as ppmvd corrected to 15% oxygen. The CEMS shall be used to demonstrate compliance with the CEMS emission standards for CO and NO_x as specified in this permit. For purposes of determining compliance with the CEMS emissions standards of this permit, missing (or excluded) data shall not be substituted. Upon request by the Department, the CEMS emissions rates shall be corrected to ISO conditions.
- b. *Valid Hour:* Hourly average values shall begin at the top of each hour. Each hourly average value shall be computed using at least one data point in each fifteen-minute quadrant of an hour, where the unit combusted fuel during that quadrant of an hour. Notwithstanding this requirement, an hourly value shall be computed from at least two data points separated by a minimum of 15 minutes (where the unit operates for more than one quadrant of an hour). If less than two such data points are available, the hourly average value is not valid. The permittee shall use all valid measurements or data points collected during an hour to calculate the hourly average values.
- c. *12-month Rolling Averages:* Compliance with the long-term emission limit for NO_x and CO shall be based on a 12-month rolling average. Each 12-month rolling average shall be the arithmetic average of all valid hourly averages collected during the current calendar month and the previous 11 calendar months.
- d. *30 unit operating day Rolling Average:* Compliance with this rolling average is as described in 40 CFR 60.4380(b)(1).
- e. *Availability:* Monitor availability for the CEMS shall be 95% or greater in any calendar quarter. The quarterly excess emissions report shall be used to demonstrate monitor availability. In the event 95% availability is not achieved, the permittee shall provide the Department with a report identifying the problems in achieving 95% availability and a plan of corrective actions that will be taken to achieve 95% availability. The permittee shall implement the reported corrective actions within the next calendar quarter. Failure to take corrective actions or continued failure to achieve the minimum monitor availability shall be violations of this permit, except as otherwise authorized by the Department's Compliance Authority.

[Rules 62-4.070(3), F.A.C.]

26. Ammonia Monitoring Requirements: In accordance with the manufacturer's specifications, the permittee shall install, calibrate, operate and maintain an ammonia flow meter to measure and record the ammonia injection rate to the SCR system prior to the initial compliance tests. The permittee shall document and periodically update the general range of ammonia flow rates required to meet permitted emissions levels over the range of load conditions allowed by this permit by comparing NO_x emissions recorded by the CEM system with ammonia flow rates recorded using the ammonia flow meter. During NO_x monitor downtimes or malfunctions, the permittee shall operate at the ammonia flow rate that is consistent with the documented flow rate for the CT load condition. [Rules 62-4.070(3)]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

G. Cooling Towers (EU-008)

This section of the permit addresses the following emissions unit.

ID No.	Emission Unit Description
008	Cooling towers

EQUIPMENT DESIGN

1. Cooling Tower Design: The permittee is authorized to construct a cooling tower system for the steam turbine and cooling of compressor gases consisting of the following equipment.
 - a. One 2-cell cooling tower with mist eliminators designed for a nominal air flow rate of 1,061,664 acfm, a circulating water flow rate of 7056 gpm and a drift rate of 0.002% of the circulating water flow rate.
 - b. One 3-cell cooling tower with mist eliminators designed for a nominal air flow rate of 114,386 acfm, a circulating water flow rate of 3800 gpm, and a drift rate of 0.005% of the circulating water flow rate.[Application No. 0730109-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

PERFORMANCE REQUIREMENTS

2. Hours of Operation: Operation of the cooling towers is not restricted (8,760 hours per year). [Application No. 0730109-001-AC and Rule 62-210.200 (PTE), F.A.C.]
3. Circulating Water Flow Rate: Upon request, the applicant shall provide a means for determining the circulating water flow rate through the new cooling towers. [Rule 62-4.070, F.A.C.]
4. Drift Rate: The permittee shall provide certification along with the application for Title V air operation permit that the cooling towers were constructed and installed to the design specifications in this permit. After this certification is provided, the cooling tower will be considered an unregulated emissions unit. [Rules 62-4.070 and 62-210.200 (PTE), F.A.C.]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

H. Auxiliary Boiler (EU-009)

This section of the permit addresses the following emissions unit.

ID No.	Emission Unit Description
009	Auxiliary boiler fires natural gas with a maximum heat input rate of 62 MMBtu/hour to start up biomass gasification system. Exhaust gases exit a 2.75 feet diameter stack that is 50 feet tall at 29,000 acfm and 296° F.

EQUIPMENT

1. Auxiliary Boiler: The permittee is authorized to install an auxiliary boiler rated at 62 MMBtu/hour of heat input from firing natural gas. The auxiliary boiler shall only be operated for purposes of starting up the gasification system. [Application No. 0730109-001-AC]

PERFORMANCE RESTRICTIONS

2. Authorized Fuel: The auxiliary boiler shall only fire natural gas with a maximum fuel sulfur content of 20 grains/100 scf. [Application No. 0730109-001-AC; and Rules 62-210.200(PTE) and 62-296.406(BACT), F.A.C.]
3. Permitted Capacity: The maximum heat input rate of the auxiliary boiler is 62 mmBtu/hour based on a 24-hour average. [Application No. 0730109-001-AC and Rule 62-210.200(PTE), F.A.C.]
4. Restricted Operation: The auxiliary boiler shall fire no more than 31.6 mmscf of natural gas during any consecutive 12 months (equivalent to 500 hours of operation at permitted capacity). The hours of operation of are not otherwise limited. [Application No. 0730109-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

REGULATORY APPLICABILITY

5. Small Boiler BACT: The auxiliary boiler is subject to the requirements of Rule 62-296.406, F.A.C., which includes a determination of the Best Available Control Technology (BACT) for PM and SO₂ emissions. For this project, BACT for PM and SO₂ emissions is determine to be the firing of natural gas as the only authorized fuel. [Rule 62-296.406, F.A.C.]
6. NSPS Subpart Dc Applicability: The auxiliary boiler is subject to all applicable requirements of 40 CFR 60, Subpart Dc which applies to Small Industrial, Commercial or Institutional Boilers. Specifically, this emission unit shall comply with 40 CFR 60.48c Reporting and Recordkeeping Requirements. [Rule 62-204.800(7)(b) and 40 CFR 60, NSPS-Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units with the applicable conditions attached as Appendix F]

EMISSIONS STANDARDS

7. Opacity Standard: In accordance with EPA Method 9, visible emissions shall not exceed 20% opacity except for one 6-minute period per hour that shall not exceed 27% opacity. [Application No. 0730109-001-AC; and Rule 62-296.406(BACT), F.A.C.]

TESTING AND MONITORING REQUIREMENTS

8. Initial Compliance Tests: As determined by EPA Method 9, the emissions unit shall be tested to demonstrate initial compliance with the opacity standard within 60 days after achieving permitted capacity, but no later than 180 days after initial operation of the unit. [Rules 62-4.070(3) and 62-297.310(7)(a)1, F.A.C.]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

H. Auxiliary Boiler (EU-009)

9. Annual Compliance Tests: During each federal fiscal year (October 1st to September 30th), the emissions unit shall be tested in accordance with EPA Method 9 to demonstrate compliance with the opacity standard. [Rule 62-297.310(7)(a)4, F.A.C.]
10. Test Requirements: The permittee shall notify the Compliance Authority in writing at least 15 days prior to any required tests. Tests shall be conducted in accordance with the applicable requirements specified in Appendix D (Common Testing Requirements) of this permit. [Rule 62-297.310(7)(a)9, F.A.C.]

RECORDS AND REPORTS

11. Test Reports: The permittee shall prepare and submit reports for all required tests in accordance with the requirements specified in Appendix D (Common Testing Requirements) of this permit. For each test run, the report shall also indicate the heat input rate. [Rule 62-297.310(8), F.A.C.]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

I. Miscellaneous Support Systems (EU-010)

This section of the permit addresses the following emissions unit.

ID No.	Emission Unit Description
010	Miscellaneous support systems

EQUIPMENT DESIGN

1. Equipment: The permittee is authorized to construct the following support equipment for this project.
 - a. A water treatment system for the boilers;
 - b. An ash handling system; and
 - c. Gas compressor systems for the biomass product gas and natural gas.[Application No. 0730109-001-AC]