Title V Air Operation Permit Revision
Permit No. 0630058-012-AV

APPLICANT

The applicant for this project is Green Circle Bio Energy Inc. The applicant's responsible official and mailing address are: Mr. Greg Martin, Vice President, Green Circle Bio Energy Inc., Cottondale Wood Pellet Plant, 2500 Green Circle Parkway, Cottondale, Florida 32431.

FACILITY DESCRIPTION

The applicant operates the Cottondale Wood Pellet Plant, which is located at 2500 Green Circle Parkway in Cottondale, Jackson County, Florida.

This is a wood fuel pellet plant, comprised of a wood fiber receiving and storage area, two dryer lines, three pelletizing lines and a pellet load-out area. Logs are debarked and milled into chips. The chips are dried and ground. The ground wood is compressed into wood pellets. The finished pellets are loaded into railcars for shipment to customers.

Wood fiber (pulpwood logs, dry wood chips or sawmill residuals) is unloaded and stored. Logs are debarked, milled into chips and stored; bark is hammer-milled, screened and stored. All stored piles are conveyed for raw material and/or fuel. A Dry Wood Truck Dump allows "as-delivered" dry wood chips to be fed directly into the existing Grinding Storage Bin, bypassing the Dryer Lines and allowing for production flexibility.

Each of two Dryer Lines consists of a 125 MMBtu per hour bark fuel combustor that exhausts into a rotary drum dryer, which dries wood chips. The dryer exhaust flows through a fan induced drafted cyclone, a wet electrostatic precipitator and a regenerative thermal oxidizer, then out a stack to the atmosphere. Bypass stacks exhaust from the wood chip dryer and bark fuel combustor, for each Dryer Line during startups (for temperature control) and malfunctions, but not more than a total of 50 hours per year. Each combustor can operate up to 1,500 hours per year in malfunction "idle mode" (defined as operation at up to a maximum heat input rate of 5 MMBtu/hr). A fraction (11 MMBtu per hour) of the gases from the secondary combustion chamber is drawn through a 6,900 lbs/hr steam generator. Steam is used in the Pelletizing process to soften the wood fiber prior to compression into pellets.

Pelletizing Lines 1, 2 and 3 each have a maximum process rate of 29.6 tons of pellets per hour. Pelletizing Lines 1 and 3 have nine vertical hammer mills each and Pelletizing Line 2 has ten vertical hammer mills. The hammer mills accurately grind the dry wood chips to under 4 mm (0.16") in size. The ground wood fiber is conveyed to three sealed storage and metering bins each with a capacity of approximately 40 tons. A ventilation system in the grinding and pellet storage bins helps minimize condensation. Steam is carefully applied to soften the wood fiber as it is drawn into the Pelletizer. The wood fiber is compressed by the Pelletizer rotating press rolls, exiting through the sizing die. The resultant heat of friction activates the wood lignin as the wood is compressed, effectively bonding the wood fiber into a durable pellet. PM emissions are controlled by two cyclones and fabric filters for each Pelletizing Line. Pellets exiting the Pellet Mills are conveyed via sealed chain conveyor to a counter flow pellet cooler. Each Pelletizing Line has a Pellet Cooler, twin cyclones, a single ID fan and an exhaust stack.

Pellets are transported to two storage bins, each with a capacity of 94 tons and located above the rail car loading area. The bins provide up to about two hours of pellet storage and uniformly meter out the pellets for rail car loading. All conveyors are sealed with dust aspiration air directed to a Buhler dust filter system.

Also included in this permit are miscellaneous unregulated/insignificant emissions units and/or activities.

	ESTIMATED POLLUTANTS (Tons per Year)				
PROCESS AREA	**PM/PM_{10}**	**NO_X**	**CO**	**VOC**	**SO_2***
Wood Fiber Receiving & Storage Area	168.3[1]/32.8	NA	NA	NA	NA
Dryer Lines 1 & 2	39.8	245.3	22.20	48.2	0.34
Pelletizing Lines 1, 2, & 3	180.0	NA	NA	194.9	NA
Bulk Load-out Area	0.71	NA	NA	NA	NA
Diesel Fuel Storage Tank	1.00	NA	NA	NA	NA
TOTAL	220.51	245.3	22.20	243.10	0.34

* SO_2 potential emission estimates are based on wood firing.
[1] Wood Fiber fugitives, 32.8 tpy PM_{10} and 168.3 T/yr PM, are not included in Facility totals.

PROJECT DESCRIPTION

The purpose of this permitting project is to revise the existing Title V permit for the above referenced facility, by incorporating the terms and conditions of air construction permits 0630058-008-AC, 0630058-009-AC and 0630058-010-AC.

PROCESSING SCHEDULE AND RELATED DOCUMENTS

Application for a Title V Air Operation Permit Revision received May 16, 2012. Application is complete.

PRIMARY REGULATORY REQUIREMENTS

Title III: The facility is not identified as a major source of hazardous air pollutants (HAP).
Title V: The facility is a Title V major source of air pollution in accordance with Chapter 62-213, Florida Administrative Code (F.A.C.).
PSD: The facility is not a Prevention of Significant Deterioration (PSD)-major stationary source of air pollution in accordance with Rule 62-212.400, F.A.C.
NSPS: The facility was originally thought to not operate units subject to the New Source Performance Standards (NSPS) of 40 CFR 60. This was re-evaluated based on new information submitted for the dryer lines' steam generators. A permit application, 0630058-011-AC is currently in-house to make this correction and have other changes made for the facility.
NESHAP: The facility does not operate units subject to the National Emissions Standards for Hazardous Air Pollutants (NESHAP) of 40 CFR 63.
CAIR: The facility is not subject to the Clean Air Interstate Rule (CAIR) set forth in Rule 62-296.470, F.A.C.
Siting: No emissions units are certified pursuant to the power plant siting provisions of Chapter 62-17, F.A.C.
CAM: Compliance Assurance Monitoring (CAM) applies to Emissions Units 002 and 003 (Dryer Lines 1 and 2) for PM, VOC, and NO_X, with emissions controlled by a fan induced drafted cyclone, a wet electrostatic precipitator and a regenerative thermal oxidizer for each Dryer Line, and Emissions Units 004, 005, and 006 (Pelletizing Lines 1, 2, and 3) for PM, with emissions controlled by two cyclones and fabric filters for each Pelletizing Line. VOC emissions from the Pelletizing Lines are uncontrolled.

PROJECT REVIEW

Revisions to permit 0630058-005-AV include the following:

A Dry Wood Truck Dump (authorized by permit 0630058-008-AC, issued April 12, 2011) allows "as-delivered" dry wood chips to be fed directly into the existing Grinding Storage Bin, bypassing the Dryer Lines and allowing for production flexibility.

Permit 0630058-008-AC authorized the use of natural gas in addition to propane gas to be used as supplemental fuels to maintain temperature of the Regenerative Thermal Oxidizer Combustion Chambers for Dryer Lines No. 1 (EU 002) and No. 2 (EU 003).

The monitored parameters for the combustors of each Dryer Line are wood chip feed screw sets revolutions per hour and combustor hydraulic ram feeder strokes per hour as required in Permit 0630058-005-AV, Specific Conditions B.1.b and B.2.b, respectively. Permit 0630058-010-AC removed the maximum production rate requirements in Permit 0630058-005-AV, Specific Conditions B.1.a and B.1.b, and retains the maximum heat input rate requirements of Specific Conditions B.2.a and B.2.b, and removed the recordkeeping requirement of wood chip feed system revolutions per hour for each dryer from Permit 0630058-005-AV, Specific Condition B.18.

Permit 0630058-008-AC allowed construction of two pellet mills, one each for Pelletizing Line No.1 (EU 004) and Pelletizing Line No. 3 (EU 006). The two pellet mills are manufactured by Bliss Industries, LLC, model B200B-141. This allows each Pelletizing Line to operate at a maximum process rate of 29.6 tons of pellets per hour. PM/PM_{10} emissions increased to 60.0 tons per year for each Pelletizing Line. Further, the horizontal hammer mill in permit 0630058-004-AC is allowed to operate 8760 hours per year and is now a part of Pelletizing Line 3.

Total wood pellet production increased to 610,000 tons per year by permit 0630058-010-AC. Overall (all three Pelletizing Lines) VOC emissions increased to 194.9 tons per year. An overall pellet production rate at Bulk Load-Out in tons of pellets produced on a 24-hour average, calculated daily, is now used as a compliance demonstration measure. Hammer mill and pelletizing infeed conveyors aspiration systems for Pelletizing Lines 1, 2 and 3 were removed.

Construction permit 0630058-009-AC, issued July 15, 2011, increased the bulk load-out maximum process rate to 88.8 tons of pellets per hour, on a 24-hour basis, calculated daily, now used as a compliance demonstration measure.

CONCLUSION

This project revises Title V air operation permit 0630058-005-AV, which was effective on March 17, 2011. This revision is issued under the provisions of Chapter 403, Florida Statutes, and Chapters 62-4, 62-210 and 62-213, F.A.C.