NORTH CAROLINA DIVISION OF AIR QUALITY

(DRAFT) Air Permit Review

10/26/05
Permit Issue Date:

Region: Winston-Salem Regional Office
County: Rockingham
NC Facility ID: 7900139
Inspector's Name: Eric Hudson
Date of Last Inspection: 01/20/2005
Compliance Code: 3/In Compliance - Inspection

Facility Data

Applicant (Facility's Name): Trigen Biopower Inc - Eden

Facility Address:
Trigen Biopower Inc - Eden
334 Gant Road
Eden, NC 27288

SIC: 4961 / Steam Supply
NAICS: 22133 / Steam and Air-Conditioning Supply

Facility Classification: Before: Title V **After:** Title V
Fee Classification: Before: Title V **After:** Title V

Permit Applicability (this application only)

SIP:
NSPS:
NESHAP:
PSD:
PSD Avoidance:
NC Toxics:
112(r):
Other:

Contact Data

Facility Contact	Authorized Contact	Technical Contact
Mark Foster Plant Superintendent (336) 635-1341 334 Gant Road Eden NC, 27288	Sam Francis Plant Manager (828) 754-0660 P.O. Box 612 Lenoir NC, 28645	Lauren Billheimer EHS Engineer (704) 510-4372 1931 Winsted Ct Charlotte NC, 28262

Application Data

Application Number: 7900139.05A
Date Received: 01/28/2005
Application Type: Renewal
Application Schedule: TV-Renewal

Existing Permit Data
Existing Permit Number: 08186/T05
Existing Permit Issue Date: 12/20/2004
Existing Permit Expiration Date: 10/31/2005

Review Engineer: Gautam Patnaik

Review Engineer's Signature: **Date:**

Comments / Recommendations:
Issue 08186/T06
Permit Issue Date:
Permit Expiration Date:

1. Introduction:

Trigen Biopower, Inc. (TBP) is located on the property of National Textiles in Eden, NC and provides steam for the textile processes.

2. Purpose of Application

This application is for the renewal for their title V application. The current Air Permit No. 08186T04 issued on November 27, 2000, will expires on October 31, 2005.

3. Application Chronology

This complete renewal application was received on September 27, 2005. The table below outlines the modification to their permit starting from their initial title V permit.

Application #	Changes Made to the Permit	Permit Issued
790139A5.A	Initial title V permit	08186T04
7900139.04A	replacement of two existing multicyclone (ID No. MCD1) installed in parallel on the woodwaste boiler with one new multicyclone (ID No. MCD2)	08186T05

4. Regulatory Review

The facility is subject to the following regulations:

15A NCAC 2D .0504: "PARTICULATES FROM WOODBURNING INDIRECT HEAT EXCHANGERS"

15A NCAC 2D .0503: "PARTICULATES FROM FUEL BURNING INDIRECT HEAT EXCHANGERS"

15A NCAC 2D .0516: "SULFUR DIOXIDE EMISSIONS FROM COMBUSTION SOURCES"

15A NCAC 2D .0521: "CONTROL OF VISIBLE EMISSIONS"

15A NCAC 2Q .0317: "PREVENTION OF SIGNIFICANT DETERIORATION (Avoidance)"

No regulatory review is required at this time for the above regulations for this renewal.

15A NCAC 2D .0524 "NEW SOURCE PERFORMANCE STANDARDS (40 CFR 60 Subpart Kb)"

The two No. 2 fuel oil fixed roof storage tanks (ID Nos. ES-4 and ES-5 20,000 gallons each i.e., 75.73 m^3) were subject to this regulation in the current permit and section (b) of this subpart states "This subpart does not apply to storage vessels with a capacity greater than or equal to 151 m^3 storing a liquid with a maximum true vapor pressure less than 3.5 kilopascals (kPa) or with a capacity greater than or equal to 75 m^3 but less than 151 m^3 storing a liquid with a maximum true vapor pressure less than 15.0 kPa." The applicant stated that the maximum true vapor pressure of No. 2 fuel oil is 0.022 psia (0.15 kPa), thus this regulation will not apply to the fuel tanks, further the applicant also mentioned that these tanks were exempt under the 15A NCAC 2Q .0503(8) based on their emissions level. Therefore these tanks are now listed as insignificant sources in the new permit.

5. NSPS, PSD, Attainment Status, 112(r), CAM

NSPS

None.

PSD/Increment

This facility is not a major for VOC for PSD purpose. The minor baseline date for Rockingham County has been triggered for PM10, SO2 and NOx has been triggered since 9/25/1998. There is no modifications made by this application or any new sources added.

Attainment Status

Rockingham County is currently designated an attainment area.

112(r)

This facility is not subject to Section 112(r) of the Clean Air Act requirements because it does not store any of the regulated substances in quantities above the thresholds in the Rule.

CAM

The before control emissions of PM10 from the wood fuel-fired boiler (137.7 million Btu per hour heat input ID No. ES-1) are more than 100 tons per year, thus, the venturi scrubber (ID No. WSD2) and the multicyclone (ID No. MCD2) used to control the emissions of PM10 from this boiler are subject to CAM plans. The plans are as mentioned below:

a) Continuous Assurance Monitoring (40 CFR 64) for multicyclone (ID No. MCD2):

Monitoring Approach. The key elements of the monitoring approach are presented in the following table.

Pressure drop across the cyclone.

Indicator	Pressure drop across the multicyclone
Measurement Approach	Pressure drop across the multicyclone will be monitored with a differential pressure gauge
Indicator Range	An excursion is defined as any reading in which the DP (differential pressure) is greater than 6 inches w.c. (water column)
QIP Threshold	The QIP threshold is based on monitoring of the multicyclone parameter
Performance Criteria: Data Representativeness	The differential pressure points are located at the inlet and outlet of the multicyclone and the gauges have an accuracy of ± 5%.
Verification of Operational Status	A new gauge will be installed to provide a direct reading of differential pressure at the monitoring location. The new gauge will be installed and calibrated according to manufacturer's recommendations.
QA/QC Practices and Criteria	Daily zero check to verify gauge operability. Monthly calibration is conducted using a second gauge and the gauge will be replaced when the difference exceeds 5%.
Monitoring Frequency	Measured every 4 hours
Data Collection Procedure	The operator will document the reading on a log every 4 hours
Averaging Period	NA

b) Continuous Assurance Monitoring (40 CFR 64) for venturi scrubber (ID No. WDS2)

Monitoring Approach. The key elements of the monitoring approach are presented in the following table.

Pressure drop across the scrubber and water flow rate.

Indicator	Pressure drop across the scrubber	Scrubber water flow rate
Measurement Approach	Pressure drop across the scrubber will be monitored with a differential pressure transmitter.	Water flow entering the scrubber will be monitored with a flow meter.
Indicator Range	An excursion is defined as an hourly average differential pressure (DP) less than 1.5 inches of water column (w.c.).	An excursion is defined as a flow rate reading less than 250 gallons per minute (GPM).
QIP Threshold	The QIP threshold is an excursion occurring at any time if the total duration of the excursions is greater than 5% of the total boiler operating time during the reporting period. An excursion triggers an inspection, corrective action, and a reporting requirement.	The QIP threshold is an excursion occurring at any time if the total duration of the excursions is greater than 5% of the total boiler operating time during the reporting period. An excursion triggers an inspection, corrective action, and a reporting requirement.
Performance Criteria: Data Representativeness	Differential pressure taps are located at the scrubbers inlet and outlet at the venturi section of the scrubber.	The flow meter can be installed at any point on the water line since the flow will be consistent throughout this line.
Verification of Operational Status	Pressure drop within the Indicator Range indicates normal operation of the scrubber	Flow rate above the Indicator Range indicates normal operation of the scrubber
QA/QC Practices and Criteria	Daily zero check to verify gauge operability. The pressure gauge is calibrated monthly using a second gauge and the gauge is replaced when the difference exceeds 5%.	The flow meter is calibrated annually based on manufacturer's instructions.
Monitoring Frequency	Measured at 15-minute intervals (maximum).	Measured at 15-minute intervals (maximum).
Data Collection Procedure	A datalogging system will recorded electronically once per 15-minute intervals.	A datalogging system will recorded electronically once per 15-minute intervals.
Averaging Period	1 hour	1 hour

c) Monitoring Approach Justification.

The emission unit is a 137.7 mmBtu/hr woodwaste fired boiler. The particulate matter emission from the boiler passes through a multicyclone where the larger-size particulate is removed and then enters a wet venturi scrubber. The monitoring approach in this CAM Plan expands the existing monitoring approach for the multicyclone and the scrubber to meet the CAM regulatory requirements.

d) Rationale for Selection of Performance Indicators:

The existing monitoring approach includes daily monitoring of the pressure drop across the venturi scrubber, monthly external inspections, and annual internal inspections of control equipment.

The pressure drop across the venturi scrubber is monitored to ensure sufficient gas velocities are present for gas/water mixing and this parameter will continue to be monitored under the CAM program. Monitoring of the water flow will ensure that sufficient flow is present for effective particulate removal. These scrubber parameters can be controlled or adjusted, as necessary, to provide reasonable assurance of compliance.

The multicyclone is a mechanical collector that has no controls or adjustable features. The pressure drop across the collector is monitored to provide an indication of normal operations. A high pressure drop would be indication of pluggage in the multicyclone and would likely affect the control efficiency of this unit. This condition is highly unusual and would typically be induced by another operating problem that would likely be identified prior to the multicyclone being plugged. If a high pressure drop were identified, the boiler would need to be shut down and the root problem repaired before resuming operation.

e) Rationale for Selection of Indicator Ranges

The primary parameter used to evaluate scrubber performance is the pressure drop across the scrubber. The applicant stated “based on manufacturer design criteria for low energy scrubbers, the minimum pressure drop required for this low energy scrubber is 2 inches water column (w.c.). No data exists to provide a direct comparison between pressure drop and particulate emissions on this particular boiler. Pressure drop readings are not available for the only particulate stack test conducted for this boiler (January 8, 1997); however, PM results were 50.5% of the limit, providing a reasonable margin of compliance. Because there are several factors affecting PM removal efficiency, there is not necessarily a direct correlation between pressure drop and PM emissions and it would be difficult, if not impossible, to gather correlation data through stack testing.

The low energy scrubber 2-inch minimum pressure drop is consistent with historical data that demonstrates typical pressure drop values between 2.4 and 3.8 inches. These readings are currently recorded every 4 hours and the attached chart summarizes the daily minimum and maximum readings for the fourth quarter 2004. Daily visual observations during those periods document “normal opacity”, indicating generally that compliance can be met with a 2-inch minimum pressure drop.

Water flow has not traditionally been measured at the facility. Based on manufacturer design criteria, the minimum water flow required for this low energy scrubber is 250 gpm. Pump curve data indicates that current water flow rates are significantly higher than the 250 gpm minimum. A flow meter will be installed as part of the implementation plan below.

By design, the normal operating range of the multicyclone is 3-4 inches of pressure drop. A pressure drop of 6 inches water column would be indicative of a problem and would trigger a shutdown of the boiler for corrective action. Currently, the facility monitors the pressure at the inlet and outlet of the multicyclone every 4 hours. This frequency is sufficient for CAM monitoring since no adjustments can be made to this unit and because the high pressure drop condition is one that would occur over time and would likely be detected through another operating problem.

Implementation Plan

The frequency of data collection requires that a data parameter transmission and data logging system be installed at the facility. Within 180 days of NCDENR's approval of the monitoring requirements proposed in the CAM plan, the system will be installed and operational.

The data logging system will compute 1-hour block averages using data collected at least every 15 minutes. All of the valid individual readings for that hour will be used to obtain an hourly average. A valid hour will consist of at least 2 data points spaced over at least 30 minutes. The data collection system will be available for data collection for at least 95% of the boiler operating hours during each reporting period. Startup and shutdown times will be exempt since it is difficult to maintain an adequate pressure drop during low boiler load conditions."

7. Construction Permit (Part II)

The sources and control devices listed under Part II of the current permit **(**The permit shield described in General Condition R did not apply to these sources in the current permit) are removed from this part of the new permit. And since this permit will provide for a 30 day comment period for the public and 45 days for an EPA review, there will no longer be a Part II in the current permit.

8. Facility Compliance Status

As per the latest inspection report (on IBEAM) done on 1/20/05, this facility was found to be in compliance.

9. Statement of Compliance

The DAQ has reviewed the compliance status of this facility. Based on the latest inspection, the facility was in compliance with all applicable requirements. The applicant has certified that the facility will be in compliance with all applicable requirements at the time of permit issuance and will continue to comply with these requirements.

10. Facility Emissions Review

There is no change in emissions for this renewal.

11. Stipulation Review

All stipulations are standard for this type of facility. The general conditions are updated with the latest version found in the title V shell.

12. Permit Shield for Non applicable Requirements

The current permit has a permit shield (Section 2.3 of the permit) stating the reasons the boiler ES-1 is not subject to NSPS subpart Db and the boilers ES-2 and ES-3 are not subject to NSPS subpart Dc.

The facility had submitted a spreadsheet calculation showing that the total emission of HAPs is less than 25 tons per year and highest emission of a single HAP (HCL) is less than 10 tons per year. Thus they were exempted from the Boiler MACT [40 CFR Part 63, Subpart DDDD: National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters]. Fred Langenbach of this Section had verified their emission and had exempted them from the boiler MACT for the above reasons in a letter dated December 19, 2003.

he applicant had requested that this requirement be stipulated in the section for "Non applicable Requirements." The emissions of HAPs from their boilers were again verified and found to be below 25 tons per year for all HAPs and the emission of a single largest HAP (HCL) is less than 10 tons per year. Thus they are exempted from the Boiler MACT and this is stated in the Non applicable Permit shield.

13. Public Notice / EPA and Affected State Review

Pursuant to 2Q. 0521, a notice of the draft Title V Permit was placed in a newspaper of general circulation in the area where the facility is located. The notice did provide for a 30 day comment period, with an opportunity for a public hearing. Copies of the public notice was sent to persons on the Title V mailing list and EPA. Pursuant to 2Q .0522, a copy of each permit application, each proposed permit and each final permit pursuant was provided to EPA. Also pursuant to 2Q .0522, a notice of the draft Title V Permit was provided to each affected State at or before the time notice provided to the public under 2Q .0521 above. South Carolina and Mecklenburg are not affected State/County for this facility.

14. Conclusions, Comments, and Recommendations

A professional engineer's seal was not required for this renewal.

A consistency determination was not required for this renewal.

Regional Office and the applicant were provided a draft of this permit and their major comments are as addressed below:

1) Regional Office comments and response are mentioned below:

a) "This facility burns woodwaste from furniture companies that might contain engineered wood products such as particleboard, MDF, etc. During the permit review for the upcoming Title V permit renewal, the engineer needs to determine if burning such waste triggers NC toxics rules."

Their application does not contain such request nor has the definition of the fuels combusted in the boiler changed, thus a review of the NC toxics rule for fuels combusted in the source was not required for this renewal.

b) "As part of the permit application for the original Title V permit the facility submitted a request for a permit shield that the wood-fired boiler not be subject to NSPS Subpart Db because when they built they boiler from two smaller boilers there was no increase in emissions and the cost of reconstruction was less than 50% of a new boiler. Even though emissions did not increase (when compared to two small boilers), does making a single unit bigger trigger a change in method of operation and therefore trigger NSPS?"

The permit shield for exemption to 40 CFR 60.40b (Subpart Db) as stated in the permit is:

- *Subpart Db applies to steam generating units that commence construction, modification, or reconstruction after June 19, 1984 and that have a maximum design heat input capacity of greater than 100 million Btu per hour.*
- *This boiler has a maximum heat input capacity of 137.7 million Btu per hour and was manufactured (constructed) in 1969.*
- *The boiler was purchased by the Permittee and relocated /reassembled at the Eden, North Carolina facility in 1996. While some boiler components were replaced as part of the reassembly, the fixed capital cost of the replacement components did not exceed 50 percent of the fixed capital costs that would be required to construct a comparable entirely new boiler. Thus, the boiler cannot be considered reconstructed under the definition in 40 CFR 60.15.*

The design capacities or method of operation were not altered as a result of the reassembly and recommissioning of the boiler. Therefore, there was no increase in the hourly emission rate from the boiler and this project was not considered a modification under 40 CFR 60.14.

2) Applicant's comments (they refer to CAM) and response are mentioned below:

a) "We would like to include a condition specifically stating that startup and shutdown periods are exempt."

The permit requirement for CAM states "During periods of startup and shutdown The Permittee will be subject to 40 CFR 64.7 (d) to comply with Compliance Assurance Monitoring."

b) "We would like to include a condition stating that the facility has 180 days upon permit issuance to have the new monitoring equipment installed and calibrated."

The facility will have 180 days from the permit issue date to have the new monitoring equipment installed, calibrated and tested as per the requirements of 40 CFR 64.4 (e).

Regional Office concurs(?) with RCO recommendation to issue air permit.

15. Table of Changes

Page Number	Condition Number	Change
Insignificant Activities table		added two No. 2 fuel oil fixed roof storage tanks (ID Nos. ES-4 & ES-5, 20,000 gallons capacity, each) Note – These two tanks were permitted sources in the previous permit, ref. 2.1 C.
8 & 9	2.3- Permit Shield for Non applicable Requirements	added avoidance of the Boiler MACT for the boilers
9 & 10	2.4 A.	added CAM plans for multicyclone (ID No. MCD2)
10 & 11	2.4 B.	added CAM plans for venturi scrubber (ID No. WDS2)
11	General conditions	updated General Conditions