



DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: 11 2015 - 004

Project Number: 2015-08-020
Installation Number: 041-0037

Parent Company: Hampton Alternative Energy Products, LLC

Parent Company Address: P.O. Box 97, Brunswick, MO 65236

Installation Name: Hampton Alternative Energy Products, LLC

Installation Address: 23551 Highway 11, Triplett, MO 65286

Location Information: Chariton County, S9, T54N, R20W

Application for Authority to Construct was made for:
Replacing a baghouse with a mechanical collector. This review was conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

Standard Conditions (on reverse) are applicable to this permit.

Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

Prepared by
Chad Stephenson
New Source Review Unit

Director or Designee
Department of Natural Resources

NOV 06 2015

Effective Date

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Department's Air Pollution Control Program of the anticipated date of start up of these air contaminant sources. The information must be made available within 30 days of actual startup. Also, you must notify the Department of Natural Resources' regional office responsible for the area within which you are located within 15 days after the actual start up of these air contaminant sources.

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant sources(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention: Construction Permit Unit.

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."

Hampton Alternative Energy Products, LLC
Chariton County, S9, T54N, R20W

1. Superseding Condition
 - A. The conditions of this permit supersede all special conditions found in the previously issued construction permit #122012-001 issued by the Air Pollution Control Program.

2. Control Device Requirement-Cyclone
 - A. Hampton Alternative Energy Products, LLC shall control emissions from the gasifier with rotary drum dryer (EU-01) using a cyclone as specified in the permit application.

 - B. The cyclone shall be operated and maintained in accordance with the manufacturer's specifications.

 - C. Hampton Alternative Energy Products, LLC shall maintain an operating and maintenance log for the cyclone which shall include the following:
 - 1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
 - 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.

3. Record Keeping and Reporting Requirements
 - A. Hampton Alternative Energy Products, LLC shall maintain all records required by this permit for not less than five years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request.

 - B. Hampton Alternative Energy Products, LLC shall report to the Air Pollution Control Program's Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than 10 days after the end of the month during which any record required by this permit show an exceedance of a limitation imposed by this permit.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (5) REVIEW

Project Number: 2015-08-020
Installation ID Number: 041-0037
Permit Number:

Installation Address:

Hampton Alternative Energy Products,
LLC
23551 Highway 11
Triplett, MO 65286

Parent Company:

Hampton Alternative Energy Products,
LLC
P.O. Box 97
Brunswick, MO 65236

Chariton County, S9, T54N, R20W

REVIEW SUMMARY

- Hampton Alternative Energy Products, LLC has applied for authority to replace a baghouse with a mechanical collector for their gasifier with a rotary drum dryer.
- The application was deemed complete on September 1, 2015.
- HAP emissions are expected from the combustion but only in amounts less than their respective SMALs.
- None of the NESHAPs apply to this installation. None of the currently promulgated MACT regulations apply to the proposed equipment.
- A mechanic collector (cyclone) is being used to control the particulate matter emissions from the equipment in this permit.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of all pollutants are conditioned below de minimis levels.
- This installation is located in Chariton County, an attainment area for all criteria pollutants
- This installation is not on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. The installation's major source level is 250 tons per year and fugitive emissions are not counted toward major source applicability.
- Ambient air quality modeling was not performed since potential emissions of the application are below de minimis levels.
- No Operating Permit is required for this installation.

- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Hampton Feed Lot Inc. (location of the proposed equipment) in Triplett, MO is a private company categorized under Livestock Feeding. Records indicate that it was established in 1972 and incorporated in Missouri.

Hampton Alternative Energy Products, LLC operates an Eco remedy Drying System to process waste material from confined animal feeding operations into energy and useable product. The system uses a gasification process to generate fuel for the drum dryer. The drum dryer maximum heat input requirement is about 2 MMBtu per hour.

One permit has been issued to Hampton Alternative Energy Products, LLC from the Air Pollution Control Program.

The following New Source Review projects have been reviewed for Hampton Alternative Energy Products, LLC from the Air Pollution Control Program.

Table 1: Project History

Project Number	Description
2010-11-001	No permit required for a biogas engine
2012-11-008	Permit #1202012-001 for Gasifier with Rotary Drum Dryer

PROJECT DESCRIPTION

Hampton Alternative Energy Products, LLC received authorization to construct an Eco remedy drying system through construction permit #122012-001. The project included a biomass gasifier coupled with a rotary drum dryer for drying digestate from the digestion process for use as an organic soil amendment.

The original system designer and equipment supplier provided a bag filter assembly behind the dryer for the purpose of particulate control. The bag filter was required in the original construction permit (#122012-001). According to the applicant since beginning operations the bag filter has posed significant operational issues due to the humidity levels behind the dryer. The higher humidity levels cause particulate to stick to the filter assembly which eventually blinds the bag filter and restricts air flow. This condition is maintained until the high differential pressure ultimately compromises the filter and allows unfiltered air to pass through the control device. For safety reasons the dryer must also be equipped with a fire suppression system that is triggered by elevated exhaust temperatures. If the elevated exhaust temperature is reached, the dryer inlet will be water quenched causing an extremely high humidity condition in the bag filter essentially ruining the media.

The applicant states the comprised bag filter has severely limited the facilities ability to operate and produce product as designed. This project is to replace the bag filtration equipment with a mechanical collector to provide an applicable control device.

EMISSIONS/CONTROLS EVALUATION

In the Missouri Code of State Regulations Division 10, Chapter 6 animal waste, is defined as biomass and included with woody materials. Since there are no emission factors for digested animal waste combustion in AP-42, the emission factors for bark combustion were used. Bark has the most similar characteristics for ash content and combustion. The bark combustion emission factors and control efficiencies used in this analysis were obtained from the EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Chapter 1, Section 6. The controlled emission factors for PM, PM₁₀, and PM_{2.5} were used to account for the mechanical collector control device.

The following table provides an emissions summary for this project. Existing potential emissions were taken from Construction Permit #122012-001. Existing actual emissions were taken from the installation's 2013 EIQ. Potential emissions of the application represent the potential of the modified equipment, assuming continuous operation (8760 hours per year). The conditioned potential emissions of the application and the new installation conditioned potential emissions are the same since this project reevaluated all the equipment at the installation.

Table 2: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions (2013 EIQ)	Conditioned Potential Emissions of the Application	New Installation Conditioned Potential
PM	25.0	2.54	N/D	4.73	4.73
PM ₁₀	15.0	2.14	0.024	4.29	4.29
PM _{2.5}	10.0	1.41	0.018	2.54	2.54
SOx	40.0	3.77	0.058	0.22	0.22
NOx	40.0	5.16	0.669	1.93	1.93
VOC	40.0	0.67	0.008	0.15	0.15
CO	100.0	5.35	1.24	5.26	5.26
GHG (CO ₂ e)	100,000	7,541	N/D	N/D	N/D
GHG (mass)	250.0	5.35	N/D	N/D	N/D
HAPs	10.0/25.0	0.00	0.00	0.33	0.33

N/A = Not Applicable; N/D = Not Determined

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of all pollutants are conditioned below de minimis levels.

APPLICABLE REQUIREMENTS

Hampton Alternative Energy Products, LLC shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved.

GENERAL REQUIREMENTS

- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220
- *Restriction of Emission of Odors*, 10 CSR 10-6.165

SPECIFIC REQUIREMENTS

- *Restriction of Emission of Particulate Matter From Industrial Processes*, 10 CSR 10-6.400

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, it is recommended that this permit be granted with special conditions.

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated August 12, 2015, received August 17, 2015, designating Hampton Alternative Energy Products, LLC as the owner and operator of the installation.

APPENDIX A

Abbreviations and Acronyms

%	percent	m/s	meters per second
°F	degrees Fahrenheit	Mgal	1,000 gallons
acfm	actual cubic feet per minute	MW	megawatt
BACT	Best Available Control Technology	MHDR	maximum hourly design rate
BMPs	Best Management Practices	MMBtu	Million British thermal units
Btu	British thermal unit	MMCF	million cubic feet
CAM	Compliance Assurance Monitoring	MSDS	Material Safety Data Sheet
CAS	Chemical Abstracts Service	NAAQS ...	National Ambient Air Quality Standards
CEMS	Continuous Emission Monitor System	NESHAPs	National Emissions Standards for Hazardous Air Pollutants
CFR	Code of Federal Regulations	NO_x	nitrogen oxides
CO	carbon monoxide	NSPS	New Source Performance Standards
CO₂	carbon dioxide	NSR	New Source Review
CO_{2e}	carbon dioxide equivalent	PM	particulate matter
COMS	Continuous Opacity Monitoring System	PM_{2.5}	particulate matter less than 2.5 microns in aerodynamic diameter
CSR	Code of State Regulations	PM₁₀	particulate matter less than 10 microns in aerodynamic diameter
dscf	dry standard cubic feet	ppm	parts per million
EQ	Emission Inventory Questionnaire	PSD	Prevention of Significant Deterioration
EP	Emission Point	PTE	potential to emit
EPA	Environmental Protection Agency	RACT	Reasonable Available Control Technology
EU	Emission Unit	RAL	Risk Assessment Level
fps	feet per second	SCC	Source Classification Code
ft	feet	scfm	standard cubic feet per minute
GACT	Generally Available Control Technology	SDS	Safety Data Sheet
GHG	Greenhouse Gas	SIC	Standard Industrial Classification
gpm	gallons per minute	SIP	State Implementation Plan
gr	grains	SMAL	Screening Model Action Levels
GWP	Global Warming Potential	SO_x	sulfur oxides
HAP	Hazardous Air Pollutant	SO₂	sulfur dioxide
hr	hour	tph	tons per hour
hp	horsepower	tpy	tons per year
lb	pound	VMT	vehicle miles traveled
lbs/hr	pounds per hour	VOC	Volatile Organic Compound
MACT	Maximum Achievable Control Technology		
µg/m³	micrograms per cubic meter		

Ms. Terry Smith
Operations Manager
Hampton Alternative Energy Products, LLC
P.O. Box 97
Brunswick, MO 65236

RE: New Source Review Permit - Project Number: 2015-08-020

Dear Ms. Smith:

Enclosed with this letter is your permit to construct. Please study it carefully and refer to Appendix A for a list of common abbreviations and acronyms used in the permit. Also, note the special conditions, on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files. Operation in accordance with these conditions, your new source review permit application is necessary for continued compliance. The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

If you were adversely affected by this permit decision, you may be entitled to pursue an appeal before the administrative hearing commission pursuant to Sections 621.250 and 643.075.6 RSMo. To appeal, you must file a petition with the administrative hearing commission within thirty days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the administrative hearing commission, Truman State Office Building, Room 640, 301 W. High Street, P.O. Box 1557, Jefferson City, Missouri 65102, website: www.oa.mo.gov/ahc. If you have any questions regarding this permit, please contact Chad Stephenson, at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or at (573) 751-4817.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Susan Heckenkamp
New Source Review Unit Chief

SH:csl

Enclosures

c: Northeast Regional Office
PAMS File: 2015-08-020
Permit Number: