



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: 092015-013 Project Number: 2015-03-093
Installation Number: 087-0016

Parent Company: Golden Triangle Energy, LLC
Parent Company Address: 15053 Highway 111, Craig, MO 64437
Installation Name: Golden Triangle Energy, LLC
Installation Address: 15053 Highway 111, Craig, MO 64437
Location Information: Holt County, S13, T62N, R40W

Application for Authority to Construct was made for:
Installation of a new centrifuge and three back up centrifuges. 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 J Luebbert
New Source Review Unit

Director or Designee Kyna L Moore
Department of Natural Resources
SEP 22 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."

Golden Triangle Energy, LLC
Holt County, S13, T62N, R40W

1. Performance Testing
 - A. Golden Triangle Energy, LLC shall perform a stack test on the centrifuge (EU050) by performing EPA test method 320, or other preapproved test method, on the new centrifuge system while the plant is fully operational. A pre-survey of the centrifuge using method 18, method 207, or other preapproved test method, will be required in order to ensure the ratio of the known VOC peak area to the total VOC peak area is at least 95%. Formaldehyde, acetaldehyde, acrolein, and methanol must be considered in the EPA method 320 performance test. This test shall be conducted within 10% of the maximum hourly production rate. The results from the stack tests shall be used to calculate actual and potential HAP and VOC emissions as mass.
 - B. These tests shall be performed within 12 months after achieving the maximum production rate of the installation, but not later than 12 months after initial start-up for commercial operation and shall be conducted in accordance with the Stack Test Procedures outlined in Special Condition 1.A
 - C. A completed Proposed Test Plan Form (enclosed) must be submitted to the Air Pollution Control Program 30 days prior to the proposed test date so that the Air Pollution Control Program may arrange a pretest meeting, if necessary, and assure that the test date is acceptable for an observer to be present. The Proposed Test Plan may serve the purpose of notification and must be approved by the Director prior to conducting the required emission testing.
 - D. Two copies of a written report of the performance test results shall be submitted to the Director within 30 days of completion of any required testing. The report must include legible copies of the raw data sheets, analytical instrument laboratory data, and complete sample calculations from the required U.S. EPA Method for at least one sample run.

SPECIAL CONDITIONS:

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

- E. The test report is to fully account for all operational and emission parameters addressed any other applicable state or federal rules or regulations.

2. If the stack test report indicates:

- 1) a maximum hourly VOC emission rate equal to or greater than 2.75 lb VOC per hour;
- 2) a maximum hourly individual HAP emission rate equal to or greater than 0.5 lb of HAP per hour; or
- 3) a maximum annual individual HAP emission rate greater than or equal to the individual HAP SMAL value,

then Golden Triangle Energy, LLC shall complete one of the appropriate actions listed below:

- 1) Send the Construction Permit Unit of the Air Pollution Control Program a letter explaining why the increased potential to emit does not affect permit type (i.e. potential annual emissions remain below de minimis levels and SMAL). The letter shall include updated emission factors for VOC and HAPs obtained from the stack testing required by Special Condition 1 of this permit. The letter shall also include updated potential to emit calculations.
- 2) Send the Construction Permit Unit an Application for Authority to Construct stating that the stack test required by this permit indicates a potential emission increase that requires a different construction permit type. (i.e. potential annual emissions exceed the de minimis level or SMAL)

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

Project Number: 2015-03-093
Installation ID Number: 087-0016
Permit Number:

Installation Address:

Golden Triangle Energy, LLC
15053 Highway 111
Craig, MO 64437

Parent Company:

Golden Triangle Energy, LLC
15053 Highway 111
Craig, MO 64437

Holt County, S13, T62N, R40W

REVIEW SUMMARY

- Golden Triangle Energy, LLC has applied for authority to install a new centrifuge and three back up centrifuges.
- The application was deemed complete on July 29, 2015.
- HAP emissions are expected from the proposed equipment. HAPs of concern from this process are acrolein, formaldehyde, acetaldehyde, and methanol.
- *New Source Performance Regulations*, 10 CSR 10-6.070 – New Source Performance Standards (NSPS), 40 CFR Part 60, Subparts Dc, Kb, VV, and VVa apply to other equipment at this installation
- None of the NESHAPs apply to this installation. None of the currently promulgated MACT regulations apply to the proposed equipment.
- No air pollution control equipment is being used in association with the new equipment.
- 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 below de minimis levels.
- This installation is located in Holt County, an attainment area for all criteria pollutants.
- This installation is on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. The installation is classified as item number 20. Chemical process plants. The installation's major source level is 100 tons per year and fugitive emissions are counted toward major source applicability.

- Ambient air quality modeling was not performed since potential emissions of the application are below de minimis levels.
- Emissions testing is required for the equipment.
- An Intermediate Operating Permit application is required for this installation within 90 days of equipment startup. Otherwise, a Part 70 Operating Permit application is required within 1 year of equipment startup.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Golden Triangle Energy, LLC is an existing installation in Craig, Missouri that currently manufactures 22.05 million gallons per year of denatured ethanol. Fuel grade ethanol is manufactured by the fermentation of corn. Gasoline is added (as denaturant) to form a blend of ethanol and gasoline. The current renewable fuel standard is between 1.96% and 2.05% gasoline for the ethanol and gasoline mixture. Golden Triangle Energy, LLC is considered a minor source for construction permitting purposes. Golden Triangle Energy, LLC is considered an intermediate source at this time. However, Golden Triangle Energy, LLC has the option to obtain a Part 70 operating permit.

The following New Source Review permits have been issued to Golden Triangle Energy, LLC from the Air Pollution Control Program.

Table 1: Permit History

| Permit Number | Description |
|-------------------------|--|
| 022000-004 | New 18 Million Gallon Ethanol Plant |
| 052003-014 ^a | Two New Storage Tanks |
| 072005-033 | Four new tanks |
| 122005-004 | Update Controls and Products |
| 072008-001 | Additional Tank Storage, Usage of Denaturants, and a Distillation Column |
| 072008-001A | Update Emission Factors |
| 072008-001B | SOx Testing Requirement |

^a Permit 052003-014 tanks were never installed.

PROJECT DESCRIPTION

Golden Triangle Energy, LLC has applied for the authority to construct a new centrifuge (EU-050) as well as three smaller backup centrifuges (EU047, EU048, EU049) that will only be used when the larger centrifuge is undergoing maintenance activities. Corn mash is created in the fermentation process from ground corn and water to produce ethanol. Whole stillage is generated in the beer stripper column as the alcohol content is separated from the spent corn mash and sent to the distillation process. The whole stillage contains spent corn mash and thin stillage. This stream flows to the centrifuge which removes the thin stillage from the spent corn mash. The corn mash is then sent

to the dryer for processing into dried distillers grains (DDGS) or sent to a concrete pad outside to be sold as wet distillers grains (WDGS). The thin stillage portion flows to the thin stillage storage tank. Emissions are not expected from the transfer of thin stillage into the storage tank. Thin stillage is pumped from the thin stillage storage tank to the evaporators. Evaporators remove water which leaves a condensed syrup product. The syrup is mixed with the WDGS for animal feed. Corn oil is also extracted from this stream. The new and larger centrifuge (EU050) has an MHDR equal to 13,800 gallons per hour. However, Golden Triangle Energy, LLC continues to operate under a production limit equal to 22.05 million gallons per year from permit number 072008-001. Emissions from the centrifuges will be uncontrolled.

EMISSIONS/CONTROLS EVALUATION

The potential emissions of the application are based on a Fourier transform infrared spectroscopy (FTIR) analysis that was conducted by Interpoll Laboratories, Inc on an existing centrifuge. However, Golden Triangle Energy, LLC was unable to verify that the proper EPA test methods were followed in order to obtain the samples that were analyzed by Interpoll Laboratories, Inc. Therefore, the tested values cannot be accepted as there is a possibility of biased results. This permit requires Golden Triangle Energy, LLC to test EU050 to quantify potential emissions. Due to the cost of performing the stack test, Golden Triangle Energy, LLC has requested to test the centrifuge at the same time as previously required stack testing that is set to occur in 2016.

The following table provides an emissions summary for this project. Existing potential emissions were taken from 072008-001. Existing potential emissions of individual HAPs were submitted by Golden Triangle Energy, LLC. Existing actual emissions were taken from the installation's 2014 EIQ. Existing actual emissions of GHG (CO_{2e}) were obtained from a GHG report that Golden Triangle Energy, LLC submitted to EPA for the year of 2014. Potential emissions of the application represent the potential of all centrifuges (EU047, EU048, EU049, and EU050), assuming continuous operation (8760 hours per year). As previously stated, the potential emissions of the application are based on test results that could not be verified at the time of permit issuance and should be solely viewed as a placeholder until completion of the required stack testing from Special Condition 1.

Table 2: Emissions Summary (tons per year)

| Pollutant | Regulatory <i>De Minimis</i> Levels | Existing Potential Emissions | Existing Actual Emissions (2014 EIQ) | Potential Emissions of the Application |
|-------------------|---|---------------------------------|---|---|
| PM | 25.0 | N/D | N/D | N/A |
| PM ₁₀ | 15.0 | <95.0 | 26.14 | N/A |
| PM _{2.5} | 10.0 | N/D | 4.54 | N/A |
| SO _x | 40.0 | <95.0 | 0.54 | N/A |
| NO _x | 40.0 | <95.0 | 31.43 | N/A |
| VOC | 40.0 | <95.0 | 48.85 | 17.15 |

| | | | | |
|-------------------------|-------------|-----------|--------|-------|
| CO | 100.0 | <95.0 | 6.14 | N/A |
| GHG (CO ₂ e) | 100,000 | N/D | 53,318 | N/A |
| GHG (mass) | 0.0 / 250.0 | N/D | N/D | N/A |
| HAPs | 10.0/25.0 | <9.0/24.0 | 6.52 | 0.26 |
| Acrolein | 0.04 | *0.119 | N/D | 0.023 |
| Acetaldehyde | 9.0 | *7.34 | N/D | 0.13 |
| Formaldehyde | 2.0 | *0.76 | N/D | 0.01 |
| Methanol | 10.0 | *0.21 | N/D | 0.10 |

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

*Existing potential emissions of individual HAPs were provided by Golden Triangle Energy, LLC

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 below de minimis levels.

APPLICABLE REQUIREMENTS

Golden Triangle Energy, 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. For a complete list of applicable requirements for your installation, please consult your operating permit.

GENERAL REQUIREMENTS

- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110
- *Operating Permits*, 10 CSR 10-6.065
- *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

- *New Source Performance Regulations*, 10 CSR 10-6.070 – New Source Performance Standards (NSPS), 40 CFR Part 60, Subparts Dc, Kb, VV, and VVa apply to other equipment at this installation

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 March 19, 2015, received March 26, 2015, designating Golden Triangle Energy, 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 | | |

Mr. Roger Hill
General Manager
Golden Triangle Energy, LLC
15053 Highway 111
Craig, MO 64437

RE: New Source Review Permit - Project Number: 2015-03-093

Dear Mr. Hill:

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 and with your amended operating permit 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, whose contact information is: Administrative Hearing Commission, Truman State Office Building, Room 640, 301 W. High Street, P.O. Box 1557, Jefferson City, Missouri 65102, phone: 573-751-2422, fax: 573-751-5018, website: www.oa.mo.gov/ahc.

Mr. Roger Hill
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If you have any questions regarding this permit, please do not hesitate to contact J Luebbert, at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or at (573) 751-4817. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Susan Heckenkamp
New Source Review Unit Chief

SH:jl

Enclosures

c: Kansas City Regional Office
PAMS File: 2015-03-093

Permit Number: