



Connecticut Department of

**ENERGY &
ENVIRONMENTAL
PROTECTION**

**BUREAU OF AIR MANAGEMENT
NEW SOURCE REVIEW PERMIT
TO CONSTRUCT AND OPERATE A STATIONARY SOURCE**

Issued pursuant to Title 22a of the Connecticut General Statutes (CGS) and Section 22a-174-3a of the Regulations of Connecticut State Agencies (RCSA).

Owner/Operator:	Frito-Lay, Inc. - Dayville Facility
Address:	1886 Upper Maple Street, Killingly, CT 06241
Equipment Location:	1886 Upper Maple Street, Killingly, CT 06241
Equipment Description:	Centaur 50-6200S gas turbine with a 44.4 MMBtu/hr Duct Burner and Heat Recovery Steam Generator

Town-Permit Numbers:	089-0105
Town-Premises Numbers:	089-0065
Prior Permit Issue Dates:	May 9, 2008 (Original)
Modification Issue Date:	May 10, 2012
Expiration Date:	None

/s/ Anne Gobin for
Daniel C. Esty
Commissioner

May 10, 2012
Date

PERMIT FOR FUEL BURNING EQUIPMENT

DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION BUREAU OF AIR MANAGEMENT

This permit specifies necessary terms and conditions for the operation of this equipment to comply with state and federal air quality standards. The Permittee shall at all times comply with the terms and conditions stated herein.

PART I. DESIGN SPECIFICATIONS

A. General Description

The Combined Heat and Power plant consists of a Solar Centaur 50-6200S natural gas combustion turbine with a 44.4 MMBTU/hr Coen duct burner and a heat recovery steam generator. Control equipment consists of a selective catalytic reduction system for NO_x control. Frito-Lay, Inc. will use the power plant as the main source for process heat and power.

B. Equipment Design Specifications

1. Turbine

- a. Maximum Fuel Firing Rate(s): 62,781 ft³/hr
 b. Maximum Gross Heat Input (MMBTU/hr): 64.2

2. Duct Burner

- a. Maximum Fuel Firing Rate(s): 43,419 ft³/hr
 b. Maximum Gross Heat Input (MMBTU/hr): 44.4

C. Control Equipment Design Specifications

1. Selective Catalytic Reduction (SCR)

- a. Make and Model: Rentech
 b. Catalyst Type: Cormetech - titanium-tungsten based material
 c. Minimum Gas Flow Rate at Maximum Rated Capacity: 50,222 acfm
 d. Maximum Ammonia Slip: 12.0 ppm
 e. Design Removal Efficiency (%): Removal Efficiency shall be such that the emission limits for NO_x in Part V.A of this permit are not exceeded.

2. Low NO_x Burner

- a. Make and Model: Solar SoLoNO_x Burners
 b. Guaranteed NO_x Emission Rate (ppm): 25

D. Stack Parameters

1. Minimum Stack Height (ft): 57
 2. Minimum Exhaust Gas Flow Rate (acfm): 50,222
 3. Minimum Stack Exit Temperature (°F): 378
 4. Minimum Distance from Stack to Property Line (ft): 195

PART II. OPERATIONAL CONDITIONS

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A. Operating Limits

1. Turbine and Duct Burner

- a. Fuel Type(s): Pipeline Quality Natural Gas
 b. Maximum Fuel Consumption over any Consecutive 12 Month Period:
930,312,000 cf/yr

PART III. MONITORING, RECORD KEEPING AND REPORTING REQUIREMENTS

A. Monitoring

1. When more than one fuel supply tank or line is to service this source or when multiple sources are supplied by one fuel tank or line, the Permittee shall use a non-resettable totalizing fuel metering device to continuously monitor fuel feed to this permitted source.
2. The Permittee shall perform inspections of the air pollution control equipment as recommended by the manufacturer.

B. Record Keeping

1. The Permittee shall keep records of annual fuel consumption. Annual fuel consumption shall be based on any consecutive 12 month time period and shall be determined by adding (for each fuel) the current month's fuel usage to that of the previous 11 months. The Permittee shall make these calculations within 30 days of the end of the previous month.
2. The Permittee shall calculate and record the monthly and consecutive 12 month $PM_{10}/PM_{2.5}$, SO_x , NO_x , CO, VOC, and ammonia emissions in units of tons. The consecutive 12 month emissions shall be determined by adding (for each pollutant) the current month's emissions to that of the previous 11 months. Such records shall include a sample calculation for each pollutant. The Permittee shall make these calculations within 30 days of the end of the previous month.

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PART III. MONITORING, RECORD KEEPING AND REPORTING REQUIREMENTS, cont'd

3. The Permittee shall keep records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of the stationary gas turbine/duct burner and any malfunction of the air pollution control equipment. Such records shall contain the following information:
 - a. type of event (startup, shutdown, or malfunction),
 - b. equipment affected,
 - c. date of event,
 - d. duration of event (minutes),
 - e. total NO_x and CO emissions emitted (lb) during the event.
4. The Permittee shall keep records of the inspection and maintenance of the SCR. The records shall include the name of the inspector, the date, the results or actions and the date the catalyst is replaced.
5. The Permittee shall keep all records required by this permit for a period of no less than five years and shall submit such records to the commissioner upon request.

C. Reporting

1. The Permittee shall notify the commissioner in writing of any malfunction of the stationary gas turbine/duct burner or the air pollution control equipment. The Permittee shall submit such notification within ten days of the malfunction. The notification shall include the following:
 - a. a description of the malfunction and a description of the circumstances surrounding the cause or likely cause of such malfunction, and
 - b. a description of all corrective actions and preventive measures taken and/or planned with respect to such malfunction and the dates of such actions and measures.

PART IV. OPERATION AND MAINTENANCE REQUIREMENTS

- A. The Permittee shall operate and maintain this equipment in accordance with the manufacturer's specifications and written recommendations. The Permittee shall operate and maintain this stationary combustion turbine/duct burner, air pollution control equipment, and monitoring equipment in a manner consistent with good air pollution control practices for minimizing emissions at all times including during startup, shutdown, and malfunction.

PART IV. OPERATION AND MAINTENANCE REQUIREMENTS, continued

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- B. The Permittee shall properly operate the control equipment at all times that this turbine/duct burner is in operation and emitting air pollutants.

PART V. ALLOWABLE EMISSION LIMITS

A. Criteria Air Pollutants, Formaldehyde and Ammonia Emissions

The Permittee shall not exceed the short-term emission limits stated herein except during periods of start-up, shut-down and malfunction for a period of time not to exceed 3 hours for each occurrence. Emissions are representative of steady state, full load operation at ISO standard conditions, unless otherwise noted.

Criteria Pollutants	ppmvd @		tpy	Basis
	15% O ₂	lb/hr		
PM/PM ₁₀ /PM _{2.5}		0.89	3.90	3,4
SO _x		0.07	0.29	1
NO _x	2.5	0.99	4.33	1
VOC		1.22	5.36	1
CO	45.0	10.84	47.49	1
Non-Criteria Pollutants	ppmvd @		tpy	Basis
	15% O ₂	lb/hr		
Ammonia	12.0	1.76	7.70	1
Formaldehyde (>50% load)		4.88E-02		2,3,4
Formaldehyde (<50% load)		4.28E-02	0.21	2,1

B. Startup and Shutdown Emission Limits

The Permittee shall minimize emissions during periods of startup and shutdown by the following work practices and time constraints. Start the ammonia injection as soon as minimum catalyst temperature is reached. The duration of startup shall not exceed 60 minutes for a hot start or a warm start, nor 180 minutes for a cold start. The duration of shutdown shall not exceed 30 minutes. Emissions during these periods shall be counted towards the annual emission limits stated herein.

- C. **Hazardous Air Pollutants:** This equipment shall not cause an exceedance of the Maximum Allowable Stack Concentration (MASC) for any hazardous air pollutant (HAP) emitted and listed in RCSA Section 22a-174-29. [STATE ONLY REQUIREMENT]

PART V. ALLOWABLE EMISSION LIMITS, continued

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- D. OPACITY:** This equipment shall not exceed 10% opacity during any six minute block average as measured by 40 CFR 60, Appendix A, Reference Method 9.

Demonstration of compliance with the above emission limits shall be met by calculating the emission rates using emission factors from the following sources:

1. Manufacturer's Emission Factor
2. Letter Dated February 18, 2008 from Solar Turbines
3. Ap-42, 5th Edition, Section 3.1, April 2000
4. Ap-42, 5th Edition, Section 1.4, July 1998

The above statement shall not preclude the commissioner from requiring other means (e.g. stack testing) to demonstrate compliance with the above emission limits, as allowed by state or federal statute, law or regulation.

PART VI. STACK EMISSION TEST REQUIREMENTS

Stack testing shall be performed in accordance with the latest Emission Test Guidelines available on the DEEP website:

http://www.ct.gov/dep/cwp/view.asp?a=2684&q=322076&depNav_GID=1619

- A.** Stack testing for NO_x shall be required for the combined operations of the turbine and duct burner to show compliance with the allowable emission limits in Part V of this permit. Stack testing shall be conducted in accordance with the frequency as specified in 40 CFR §60.4340(a).
- B.** Stack testing for CO and ammonia shall be required for the combined operations of the turbine and duct burner to show compliance with the allowable emission limits in Part V of this permit. Stack testing shall be conducted with a frequency of at least once every five years from the date of the initial performance test.

Stack test results shall be reported as follows: NO_x and CO in units of ppmvd at 15% O₂, and ammonia in units of µg/m³ and ppmvd at 15% O₂.

PART VII. SPECIAL REQUIREMENTS

- A. STATE ONLY REQUIREMENT:** The Permittee shall operate this facility at

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all times in a manner so as not to violate or contribute significantly to the violation of any applicable state noise control regulations, as set forth in RCSA §§22a-69-1 through 22a-69-7.4.

- B.** The Permittee shall comply with all applicable sections of the following New Source Performance Standard at all times.

Title 40 CFR Part 60, Subparts KKKK and A.

Copies of the Code of Federal Regulations (CFR) are available online at the U.S. Government Printing Office website.

- C.** The Permittee shall limit NO_x emissions at the premises to under 50 tons per calendar year and under 274 pounds on any day during the ozone season (i.e. May 1 to September 30, inclusive). The Permittee shall keep records demonstrating compliance with these limits pursuant to RCSA Section 22a-174-22(b)(2).
- D.** In the event that a malfunction causing either an emission exceedance or a parameter monitored out of recommended range is not corrected within three hours, the Permittee shall immediately institute shutdown of the turbine/duct burner.

PART VIII. ADDITIONAL TERMS AND CONDITIONS

- A.** This permit does not relieve the Permittee of the responsibility to conduct, maintain and operate the regulated activity in compliance with all applicable requirements of any federal, municipal or other state agency. Nothing in this permit shall relieve the Permittee of other obligations under applicable federal, state and local law.
- B.** Any representative of the DEEP may enter the Permittee's site in accordance with constitutional limitations at all reasonable times without prior notice, for the purposes of inspecting, monitoring and enforcing the terms and conditions of this permit and applicable state law.
- C.** This permit may be revoked, suspended, modified or transferred in accordance with applicable law.
- D.** This permit is subject to and in no way derogates from any present or future property rights or other rights or powers of the State of Connecticut and conveys no property rights in real estate or material, nor any exclusive privileges, and is further subject to any and all public and private rights and to any federal, state or local laws or regulations pertinent to the facility or regulated activity

PART VIII. ADDITIONAL TERMS AND CONDITIONS, continued

affected thereby. This permit shall neither create nor affect any

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rights of persons or municipalities who are not parties to this permit.

- E.** Any document, including any notice, which is required to be submitted to the commissioner under this permit shall be signed by a duly authorized representative of the Permittee and by the person who is responsible for actually preparing such document, each of whom shall certify in writing as follows: "I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that any false statement made in the submitted information may be punishable as a criminal offense under section 22a-175 of the Connecticut General Statutes, under section 53a-157b of the Connecticut General Statutes, and in accordance with any applicable statute."
- F.** Nothing in this permit shall affect the commissioner's authority to institute any proceeding or take any other action to prevent or abate violations of law, prevent or abate pollution, recover costs and natural resource damages, and to impose penalties for violations of law, including but not limited to violations of this or any other permit issued to the Permittee by the commissioner.
- G.** Within 15 days of the date the Permittee becomes aware of a change in any information submitted to the commissioner under this permit, or that any such information was inaccurate or misleading or that any relevant information was omitted, the Permittee shall submit the correct or omitted information to the commissioner.
- H.** The date of submission to the commissioner of any document required by this permit shall be the date such document is received by the commissioner. The date of any notice by the commissioner under this permit, including but not limited to notice of approval or disapproval of any document or other action, shall be the date such notice is personally delivered or the date three days after it is mailed by the commissioner, whichever is earlier. Except as otherwise specified in this permit, the word "day" means calendar day. Any document or action which is required by this permit to be submitted or performed by a date which falls on a Saturday, Sunday or legal holiday shall be submitted or performed by the next business day thereafter.

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PART VIII. ADDITIONAL TERMS AND CONDITIONS, continued

- I. Any document required to be submitted to the commissioner under this permit shall, unless otherwise specified in writing by the commissioner, be directed to: Office of Director; Engineering & Enforcement Division; Bureau of Air Management; Department of Energy and Environmental Protection; 79 Elm Street, 5th Floor; Hartford, Connecticut 06106-5127.

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