

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION



Pages 2 through 12 are hereby incorporated by reference into this permit

ORIGINAL

Town No. 213	Premise No. 1	Permit No. 0029	Stack No. 29
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Equipment Classification <input checked="" type="checkbox"/> Fuel Burning <input type="checkbox"/> Incinerator <input type="checkbox"/> Process Mfg. Other _____	Date Issued 11/6/91 Date Revised 11/5/96	Expiration Date (none unless noted)
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PERMIT TO: Construct Operate Other Final Permit to Operate
Revised on 11/5/96 from 10/29/93

FEDERAL REQUIREMENTS: NSPS (40 CFR PART 60) Subpart GG
 NESHAP (40 CFR PART 61) Subpart _____
 MACT (40 CFR PART 63) Subpart _____

OZONE NON-ATTAINMENT STATUS: Severe (Major Source if VOC or NOx > 25 TPY)
 Serious (Major Source if VOC or NOx > 50 TPY)

TYPE OF POLLUTANT FOR WHICH A PREMISE IS A "MAJOR SOURCE": SOx NOx CO TSP VOC PM-10

SOURCE CLASS: New Source Minor Modification Major Modification Aggregate

TRANSFERRED TO:
Algonquin Windsor Locks LLC
2 Elm St
Windsor Locks, CT 06096
ENGINEER: N/N DATE: 6/12/03

Equipment Description GENERAL ELECTRIC GAS TURBINE MODEL PB6541(B)
Location of Equipment (No. & Street, Town, Zip) TWO ELM STREET, WINDSOR LOCKS, CONNECTICUT 06096
Firm Name DEXTER CORPORATION COGENERATION FACILITY



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The following shall be constructed/operated in accordance with the specifications listed in the permit application, with the terms of the permit letter, and with all applicable sections of the Regulations of Connecticut State Agencies.

EQUIPMENT DESCRIPTION (I.D.): GENERAL ELECTRIC GAS TURBINE MODEL PB6541(B)

This permit is being issued pursuant to Section 22a-174-3 of the Regulations of Connecticut State Agencies (hereinafter referred to as "Regulations" and pursuant to the Clean Air Act and U.S. Environmental Protection Agency's (U.S. EPA) Prevention of Significant Deterioration Regulations (PSD) (40 CFR Part 52.21) under the authority granted to the Connecticut Department of Environmental Protection (hereinafter referred to as "The Department") by the U.S. EPA on September 29, 1982.

MAXIMUM RATED CAPACITY:

Gas Turbine:

Natural Gas: 555.2 MMBTU/hr (@ 0°F)
No. 2 Fuel Oil: 529.5 MMBTU/hr (@ 0°F)

TRANSFERRED TO:

*ALGONQUAN WINDSOR LOCKS LLC
2 ELM ST
WINDSOR LOCKS, CT 06096
ENGINEER: HJA DATE: 06/12/03*

FUEL CONSUMPTION, MAXIMUM FIRING RATES:

Gas Turbine:

Natural Gas: 539,029.1 cf/hr
No. 2 Fuel Oil: 3755.3 gal/hr

EMISSION LIMITS:

Gas Burning Case

Oil Burning Case

NOx Gas Turbine 42 ppmvd @ 15% O₂
SOx Gas Turbine N/A

62 ppmvd @ 15% O₂
52 ppmvd @ 15% O₂

Records indicating continual compliance with all above conditions must be kept on site at all times and made available upon Departmental request for the duration of this permit.

Firm Name DEXTER CORPORATION COGENERATION FACILITY
Location of Equipment (No. & Street, Town, Zip) TWO ELM STREET, WINDSOR LOCKS, CONNECTICUT 06096
Sidney J. Holbrook, Commissioner, or Designated Agent <i>[Signature]</i>



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EQUIPMENT DESCRIPTION (I.D.): GENERAL ELECTRIC GAS TURBINE MODEL PB6541(B)

FUEL SPECIFICATIONS: No. 2 fuel oil; maximum sulfur in fuel limit 0.28% by weight.

STACK HEIGHT: 177' above grade

PROPERTY LINE DISTANCE FROM STACK: 250 feet

NO_x CONTROL: Steam Injection with NO_x limits enforceable by CEM. Target Steam/Fuel Ratios: 1.13/1 for natural gas, 1.25/1 for fuel oil

MINIMUM FLOW AT MAXIMUM OPERATION:

1. Gas Turbine: 430,965 ACFM
2. Gas Turbine with the equivalent of one Nebraska Boiler: 480,801 ACFM

EXHAUST TEMPERATURE: 325°F Boiler

MONITORING REQUIREMENTS/OPERATING PARAMETERS:

1. This source is subject to all monitoring requirements specified in title 40 of the Code of Federal Regulations Part 60 (40 CFR 60) Subpart GG, Standards of Performance for Stationary Gas Turbine Engines, as may be amended from time to time, except as stated herein. The U.S. EPA, in a letter dated May 3, 1996 (DeVillars to Fairbanks), granted this source an Alternative Monitoring Plan. Such plan allows this source to use monitoring methods other than those stated in 40 CFR 60.334(a) and 60.334(b) to estimate nitrogen oxide (NO_x) emissions and to monitor the nitrogen and sulfur content of the fuel.

A Continuous Emissions Monitoring (CEM) system shall be maintained and operated for the following pollutants: NO_x, expressed as nitrogen dioxide (NO₂), sulfur oxides (SO_x), expressed as SO₂, oxygen (O₂) or carbon dioxide (CO₂) and opacity. All SO₂ and NO_x data shall be corrected to a dry basis and 15% O₂ and shall be recorded in 1-hour block averages. Opacity shall be recorded in 6-minute block averages. O₂ or CO₂ shall be recorded in 1-hour block averages.

Records indicating continual compliance with all above conditions must be kept on site at all times and made available upon Departmental request for the duration of this permit.

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EQUIPMENT DESCRIPTION (I.D.): GENERAL ELECTRIC GAS TURBINE MODEL PB6541(B)

MONITORING REQUIREMENTS/OPERATING PARAMETERS, continued:

CEM data shall be used to determine compliance with this permit in accordance with the following enforcement matrix:

Pollutant / Parameter Monitored	Emission Limitation and Reporting Units	Reportable Averaging Period
SOx (burning No. 2 oil)	52 ppmv @ 15% O ₂	1-hr block
SOx (burning natural gas)	n/a	n/a
NOx (burning No. 2 oil)	62 ppmv @ 15% O ₂	1-hr block
NOx (burning natural gas)	42 ppmv @ 15% O ₂	1-hr block
Opacity	10%	6-minute block

(Exceptions are Notes 1, 2 and 3 on pages 9 and 10 of this permit, where NOx exceedances are allowed)

A continuous monitoring system (CMS) shall be maintained and operated for all operating parameters and air pollution control parameters necessary to determine compliance with the limits in this permit. This shall include, but not be limited to, a CMS to monitor and record the fuel consumption and the ratio of steam to fuel being fired in the turbine as specified in 40 CFR 60 Subpart GG, Section 60.334(a).

All CEM equipment shall be installed, calibrated, tested, operated and maintained in accordance the CT DEP Continuous Emission Monitoring Guideline (dated August 19, 1996) and in accordance with requirements specified in 40 CFR 60 Subpart A, Appendix B and Appendix F, as may be amended from time to time.

2. Reporting Requirements:

CEM and CMS data required by this permit shall be maintained at the site and made available upon request by Department representatives. Records shall be maintained on-site for a period of two (2) years or longer if so

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EQUIPMENT DESCRIPTION (I.D.): **GENERAL ELECTRIC GAS TURBINE MODEL PB6541(B)**

MONITORING REQUIREMENTS/OPERATING PARAMETERS, continued:

indicated by subsequent permits.

The owner/operator of this turbine shall comply with the reporting and notification requirements specified in the CT DEP Continuous Emission Monitoring Guideline dated August 19, 1996. The Quarterly Emissions and Quality Assurance Report shall be submitted to the Department's CEM Group by the 30th day following the end of each calendar quarter.

The owner/operator of this turbine shall review all recorded data daily and report to The Department within three (3) working days any exceedence of an allowable emission limit or apparent deviation from any conditions of this or any subsequent permit. Shutdown of this turbine shall be based on the following averaging periods:

Shutdown Limits

S O₂ and NO_x Shutdown: 24 consecutive 1 hour block averages > permit limit
Opacity Shutdown: 5 consecutive 6 minute block averages > 40%

- No AP-42 data exists for PM-10 emissions from gas turbines. At present, the instack portion of Method 201A shall be used as the basis for allowable PM-10 emissions and at a later date.

Federal regulations may require consideration of the "back catch" as developed in Method 202. Further emission limitations as required under Section 22a-174-3(g)(2)(H) shall be applied for the control of condensable particulate matter if required under Section 22a-174-3(g)(4) of the Regulations.

- Allowable Emission Rates:

Maximum Allowable Opacity: 10% for any 6 minute block average and < 40% instantaneous.

Emissions of NO_x, expressed as N O₂, from the subject gas turbine system shall not exceed 42 parts per million (42 ppmvd at 15% O₂) while firing natural gas and 62 parts per million (62 ppmvd at 15% O₂) while firing No. 2 fuel oil. The owner/operator agrees to shut down the system at any time when all 1 hour average measured levels of

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MONITORING REQUIREMENTS/OPERATING PARAMETERS, continued:

NO_x, expressed as N O₂, based upon either a stack test acceptable to the Commissioner of CEM data, recorded over any consecutive 24 hour time period, exceed these limits.

Emissions of SO_x, expressed as S O₂, from the subject combustion turbine are fuel dependent and shall not exceed 52 parts per million (52 ppmvd at 15% O₂), when burning No. 2 fuel oil.

5. As a condition of this Final Permit to Operate, compliance with Section 22a-174-29, the Hazardous Air Pollutant Regulations, must be demonstrated by Dexter Corporation with respect to sulfuric acid (H₂SO₂) emissions. Stack tests have indicated an exceedence of the MASC for H₂SO₂. While operating with No. 2 fuel oil, the table below compares the calculated controlled ASC after addition of ammonia with the MASC.

These are calculated values and are based upon theoretical consideration of preferential reactivity of ammonia with sulfur trioxide/sulfuric acid. As such time when an ambient air quality standard is promulgated by the Commissioner, or at such time that a stack test method is developed showing compliance using ammonia, Dexter Corporation shall take whatever measures are necessary to demonstrate actual compliance with Section 22a-174-24 or Section 22a-174-29 of the Regulations, respectively.

The source shall operate the equivalent of only one of the two Nebraska boilers simultaneously with the combustion turbine in order to stay in compliance with Section 22a-174-29 of the Regulations. This is a natural limitation due to the design capacity of the feed water system.

The following table lists the four operating scenarios and the applicable concentrations for sulfuric acid:

MONITORING REQUIREMENTS/OPERATING PARAMETERS, continued:

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MONITORING REQUIREMENTS/OPERATING PARAMETERS, continued:

Maximum Allowable Stack Concentrations (MASC)

Operating Scenario	Actual Stack Concentration (ug/m ³)	MASC (ug/m ³)	Ammonia Injection Rate (lb/hr)
Gas Turbine & 1 Boiler *	2,427.9	2,514.1	1.0
Gas Turbine Alone	2,061.8	2,831.2	1.0
2 Boilers	5,114.8	11,188	0.0
1 Boiler*	5,304	22,132	0.0

*Or the equivalent of one boiler

ADDITIONAL TERMS AND CONDITIONS:

1. 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.
2. Any representative of the DEP 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.
3. This permit may be revoked, suspended, modified or transferred in accordance with applicable law.
4. 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 affected thereby. This permit shall neither create nor affect

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ADDITIONAL TERMS AND CONDITIONS, continued:

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

5. 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 the documents and all attachments and 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, and I understand that any false statement made in this document or its attachments may be punishable as a criminal offense." Any false statement in any information submitted pursuant to this permit may be punishable as a criminal offense in accordance with Connecticut General Statutes §22a-6, under §53a-157 of the Connecticut General Statutes.
6. 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.
7. Within fifteen 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.
8. 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.
9. Any document required to be submitted to the Commissioner under this permit shall, unless otherwise specified in

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ADDITIONAL TERMS AND CONDITIONS, continued:

Air Management; Department of Environmental Protection; 79 Elm Street, 5th Floor; Hartford, Connecticut 06106-5127.

NOTES:

1. The NOx emission limits contained in page 2 of Permit #213-0029 shall apply at all times except during periods of start-up, shutdown, or malfunction as defined below.
2. The turbine start-up shall be defined as that period of time for which initiation of combustion turbine firing until the unit reaches steady state operation. This period shall not exceed 180 minutes for both hot and cold starts.
3. Shutdown shall be defined as that period of time from the initial lowering of turbine output to the point at which the combustion process has stopped. This period shall not exceed 180 minutes.
4. "Malfunction" means any sudden and unavoidable failure of air pollution control equipment or process equipment or of a process to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation, or any other preventable or upset condition or preventable equipment breakdown shall not be considered malfunctions. This period shall not exceed 180 minutes.
5. The steam injection system must be used at all times during operation of the gas turbine except when combustion turbine loads are less than 20%.
6. Ammonia shall be injected at a rate of 1 lb/hr whenever the combustion turbine being fueled with No. 2 fuel oil.
7. "Owner/operator" in permit refers to the Dexter Corporation.
8. Dexter Corporation shall consider replacement of this combustor with a Dry Lo-NOx Combustor, allowing revision of this permit, setting lower limits for nitrogen oxides emissions. This consideration shall be made when the technology is available and consideration should occur prior to combustion system replacement.
9. For a period not to exceed one hour per week, Dexter Corporation shall be allowed to burn a combination of No. 2 fuel oil and natural gas for the purposes of maintenance. During these periods, the gas turbine will be subject to the No. 2 fuel oil emission limits.

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TABLE 1, ALLOWABLE EMISSIONS

OPERATING MODE ID: Combustion Turbine:
Natural Gas Fired

Town No.	Premise No.	Permit No.	Stack No.
213	1	0029	29

CRITERIA POLLUTANTS	LB/HOUR *	LB/MMBTU	ppmvd		TPY **
TSP	7.73	0.014			29.11
SO _x expressed as SO ₂	0.32	0.00058	0.12		1.21
NO _x expressed as NO ₂	82.28	0.149	42		309.80
HC	14.36	0.026			54.06
CO	61.85	0.112			232.87
Pb	0	0			0
PM-10 Method 201A	2.37	4.26E-3			8.87
<u>NON-CRITERIA POLLUTANTS</u>					

COMMENTS: *Based on 555.2 MMBTU/hr @ 0°F
**Based on 474.4 MMBTU/hr @ 60°F

Firm Name
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TABLE 2, ALLOWABLE EMISSIONS

OPERATING MODE ID: Combustion Turbine: No. 2 Oil-Fired (max %S = 0.28 by wt)

Town No.	Premise No.	Permit No.	Stack No.
213	1	0029	29

CRITERIA POLLUTANTS	LB/HOUR*	LB/MMBTU	ppmvd	ASC (ug/m ³)**	TPY***
TSP	18.53	0.035			69.23
SO _x expressed as SO ₂	148.26	0.28	52		553.841
NO _x expressed as NO ₂	130.25	0.246	62		486.59
HC	13.77	0.026			51.43
CO	57.71	0.109			215.60
Pb	0.0016	0.000003			5.9x10 ⁶
PM-10 Method 201A	16.23	3.06E-2			60.63
<u>NON-CRITERIA POLLUTANTS</u>					
H ₂ SO ₄	3.33	0.0063		**	12.44

COMMENTS: *Based on 529.5 MMBTU/hr @ 0°F
 **See Condition 5 on page 6 of this permit
 ***Based on 451.6 MMBTU/hr @ 60°F

Firm Name
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TABLE 3, ALLOWABLE EMISSIONS

OPERATING MODE ID: Total Allowables for one combustion turbine & the equivalent of one Nebraska boiler. Worst case: maximum %S = 0.28 by weight

Town No.	Premise No.	Permit No.	Stack No.
213	1	0029,0031,0032	29

CRITERIA POLLUTANTS	LB/HOUR*	ASC (ug/m ³)*	TPY***
TSP			79.79
SO _x expressed as SO ₂			762.45
NO _x expressed as NO ₂			635.6
HC			58.44
CO			296.647
Pb			8.1E-3
PM-10 Method 201A			66.32
<u>NON-CRITERIA POLLUTANTS</u>			
H ₂ SO ₄		*	17.214

COMMENTS: *See Condition 5 on page 6 of this permit
 Operating mode is 1 combustion turbine and the equivalent of 1 Nebraska boiler at maximum rated capacity firing 0.28% by weight sulfur No. 2 oil or natural gas.

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