



STATE OF CONNECTICUT  
DEPARTMENT OF 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 and Section 22a-174-3a of the Regulations of Connecticut State Agencies.

Owner/Operator:	The University of Connecticut
Address:	31 LeDoyt Road, Unit 3038, Storrs, CT 06269-3038
Equipment Location:	Central Heating Plant
Equipment Description:	TECOHILL CH-1000 Chiller with WAUKESHA L36 GLDLE V12 Low Emission Lean Burn Natural Gas Engine

Permit Number:	0028
Town/Premises Numbers:	098/15
Original Permit Issue Date:	04/02/01
Revision Issue Date:	May 11, 2003
Expiration Date:	

Jane K. Stahl

5/11/03

\_\_\_\_\_  
Arthur J. Rocque, Jr.  
Commissioner

\_\_\_\_\_  
Date

**PERMIT FOR FUEL BURNING EQUIPMENT**

**STATE OF CONNECTICUT, DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BUREAU OF AIR MANAGEMENT**

The conditions on all pages of this permit and attached appendices shall be verified at all times except those noted as design specifications. Design specifications need not be verified on a continuous basis; however, if requested by the Commissioner, demonstration of compliance shall be shown.

**PART I. OPERATIONAL CONDITIONS**

**A. Operating Limits**

1. Fuel Type(s): Natural Gas
2. Maximum Fuel Consumption over any Consecutive Twelve (12) Month Period: 65,000,000 ft<sup>3</sup>/year total between permit numbers 098-0027 and 098-0028

**B. Design Specifications**

1. Maximum Fuel Firing Rate(s): 7,418 ft<sup>3</sup>/hr
2. Maximum Gross Heat Input (MM BTU/hr): 7.68
3. Minimum Stack Height (ft): 71.5
4. Minimum Exhaust Gas Flow Rate (acfm): 4,274
5. Stack Exit Temperature (°F): 839
6. Minimum Distance from Stack to Property Line (ft): 500

**PART II. CONTROL EQUIPMENT** (Applicable if -X- Checked) (See Appendix E for Specifications)

**A. Type**

- |   |  |
|---|--|
| <input type="checkbox"/> None                       | <input type="checkbox"/> Selective Non-Catalytic Reduction |
| <input type="checkbox"/> Scrubber                   | <input type="checkbox"/> Selective Catalytic Reduction     |
| <input type="checkbox"/> Electrostatic Precipitator | <input type="checkbox"/> Low NOx Burner                    |
| <input type="checkbox"/> Cyclone                    | <input type="checkbox"/> Fabric Filter                     |
| <input type="checkbox"/> Multi-Cyclone              | <input type="checkbox"/> Particulate Trap                  |
| <input type="checkbox"/> Thermal DeNOx              | <input checked="" type="checkbox"/> Oxidation Catalyst     |

**B. Minimum Efficiency**

1. Capture Efficiency (%): CO: 100      VOC: 100
2. Removal Efficiency (%): CO: 90      VOC: 30
3. Overall Efficiency (%): CO: 90      VOC: 30

FIRM NAME: The University of Connecticut  
 EQUIPMENT LOCATION: Central Heating Plant, Storrs, CT  
 EQUIPMENT DESCRIPTION (MODEL, I.D. #): TECOHILL CH-1000 Chiller with  
WAUKESA L136 GLDLE V12 Low Emission Lean Burn Natural Gas Engine

Town No: 098

Premise No: 15

Permit No: 0028

Stack No: 18

**PERMIT FOR FUEL BURNING EQUIPMENT**

**STATE OF CONNECTICUT, DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BUREAU OF AIR MANAGEMENT**

**PART III. CONTINUOUS EMISSION MONITORING REQUIREMENTS AND  
ASSOCIATED EMISSION LIMITS** (Applicable if -X- Checked)

CEM shall be required for the following pollutant/operational parameters and enforced on the following basis:

<u>Pollutant/Operational Parameter</u>	<u>Averaging Times</u>	<u>Emission Limit</u>	<u>Units</u>
<input checked="" type="checkbox"/> None			
<input type="checkbox"/> Opacity	six minute block		
<input type="checkbox"/> SO <sub>x</sub>	3 hour rolling		
<input type="checkbox"/> NO <sub>x</sub>	24 hour rolling		
<input type="checkbox"/> CO	1 hour block		
<input type="checkbox"/> CO <sub>2</sub>	1 hour block		
<input type="checkbox"/> O <sub>2</sub>	1 hour block		
<input type="checkbox"/> Temperature	continuous		

(See Appendix A for General Requirements)

**PART IV. MONITORING, RECORD KEEPING AND REPORTING REQUIREMENTS**

- A.** The permittee shall keep records of annual fuel consumption. Annual fuel consumption shall be based on any consecutive twelve (12) month time period and shall be determined by adding the current month's fuel usage to that of the previous eleven (11) months. The permittee shall make these calculations within thirty (30) days of the end of the previous month.
- B.** Records of all tune-ups, repairs, replacement of parts and other maintenance;
- C.** On or before April 15 of each year, the owner or operator of any source subject to Section 22a-174-22 shall submit a report on NO<sub>x</sub> emissions from such source, on a form provided by the Commissioner.
- D.** The permittee shall use a fuel metering device to continuously monitor fuel feed to this permitted source.
- E.** The permittee shall keep records on premises indicating continual compliance with all above conditions at all times and shall make them available upon request by the Commissioner for the duration of this permit, or for the previous five (5) years, whichever is less.

FIRM NAME: The University of Connecticut  
 EQUIPMENT LOCATION: Central Heating Plant, Storrs, CT  
 EQUIPMENT DESCRIPTION (MODEL, I.D. #): TECOHILL CH-1000 Chiller with  
WAUKESA L136 GLDLE V12 Low Emission Lean Burn Natural Gas Engine

Town No: 098

Premise No: 15

Permit No: 0028

Stack No: 18

**PERMIT FOR FUEL BURNING EQUIPMENT**

**STATE OF CONNECTICUT, DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BUREAU OF AIR MANAGEMENT**

**PART V. ALLOWABLE EMISSION LIMITS**

The Permittee shall not exceed the emission limits stated herein at any time.

<u>Criteria Pollutants</u>	<u>#/hr</u>	<u>#/MM BTU</u>	<u>TPY **</u>
PM-10	0.44	0.06	1.94
Sox	0.52	0.07	2.28
NOx	1.11	0.15	4.86
VOC	0.74	0.10	3.24
CO	0.31	0.042	1.36

<u>Non-Criteria Pollutants</u>	<u>MASC * (ug/m<sup>3</sup>)</u>
Formaldehyde	13,917

\*Maximum allowable stack concentration, 8 hour Hazardous Limiting Value

\*\* These represent totals between permit numbers 098-0027 and 098-0028

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 factors provided by TECOCHILL (Chiller manufacturer).
2. For calculation of emissions of formaldehyde, Ventura County Air Pollution Control District (California) emission factor of 32.5 lb/10<sup>6</sup> ft<sup>3</sup>.

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.

FIRM NAME: The University of Connecticut  
 EQUIPMENT LOCATION: Central Heating Plant, Storrs, CT  
 EQUIPMENT DESCRIPTION (MODEL, I.D. #): TECOHILL CH-1000 Chiller with  
 WAUKESA L136 GLDLE V12 Low Emission Lean Burn Natural Gas Engine

Town No: 098

Premise No: 15

Permit No: 0028

Stack No: 18

**PERMIT FOR FUEL BURNING EQUIPMENT****STATE OF CONNECTICUT, DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BUREAU OF AIR MANAGEMENT****PART VI. STACK EMISSION TEST REQUIREMENTS** (Applicable if -X- Checked)

Stack emission testing shall be required for the following pollutant(s):

- None at this time
- TSP             SOx             NOx             CO
- VOC             PM-10         Pb
- Other (HAPS): \_\_\_\_\_, \_\_\_\_\_,

(See Appendix B for General Requirements)

**PART VII. APPLICABLE REGULATORY REFERENCES** (The Regulations of Connecticut State Agencies, hereinafter referred to as the Regulations)

22a-174-3a; 22a-174-18; 22a-174-19; 22a-174-29(b); 22a-174-22

These references are not intended to be all inclusive - other sections of the Regulations may apply.

**PART VIII. SPECIAL REQUIREMENTS**

- A.** The Permittee shall operate and maintain this equipment in accordance with the manufacturer's specifications and written recommendations.
- B.** *Noise (for non-emergency use)*

The Permittee shall operate this facility at 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 Sections 22a-69-1 through 22a-69-7.4 of the Regulations.

- C.** The Permittee shall comply with all applicable sections of the following New Source Performance Standard(s) at all times. (Applicable if -X- checked)

40 CFR Part 60, Subpart:  Db     Dc     GG     A

None

(See Appendix C for Detailed Requirements)

**PART IX. 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.

FIRM NAME: The University of Connecticut  
 EQUIPMENT LOCATION: Central Heating Plant, Storrs, CT  
 EQUIPMENT DESCRIPTION (MODEL, I.D. #): TECOHILL CH-1000 Chiller with  
WAUKESA L136 GLDLE V12 Low Emission Lean Burn Natural Gas Engine

**PERMIT FOR FUEL BURNING EQUIPMENT**

**STATE OF CONNECTICUT, DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BUREAU OF AIR MANAGEMENT**

**PART IX. ADDITIONAL TERMS AND CONDITIONS, continued:**

- B.** 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.
- 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 affected thereby. This permit shall neither create nor affect any 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 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.

FIRM NAME:	The University of Connecticut
EQUIPMENT LOCATION:	Central Heating Plant, Storrs, CT
EQUIPMENT DESCRIPTION (MODEL, I.D. #):	TECOHILL CH-1000 Chiller with WAUKESA L136 GLDLE V12 Low Emission Lean Burn Natural Gas Engine

**PERMIT FOR FUEL BURNING EQUIPMENT**

**STATE OF CONNECTICUT, DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BUREAU OF AIR MANAGEMENT**

**PART IX. ADDITIONAL TERMS AND CONDITIONS, continued:**

- 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.
- 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 Assistant Director; Compliance & Field Operations Division; Bureau of Air Management; Department of Environmental Protection; 79 Elm Street, 5th Floor; Hartford, Connecticut 06106-5127.

FIRM NAME: The University of Connecticut  
 EQUIPMENT LOCATION: Central Heating Plant, Storrs, CT  
 EQUIPMENT DESCRIPTION (MODEL, I.D. #): TECOHILL CH-1000 Chiller with  
WAUKESA L136 GLDLE V12 Low Emission Lean Burn Natural Gas Engine

**PERMIT FOR FUEL BURNING EQUIPMENT**

**STATE OF CONNECTICUT, DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BUREAU OF AIR MANAGEMENT**

Appendices attached (Applicable if -X- checked):

- A Continuous Emission Monitoring Requirements
- B Stack Emission Test Requirements
- C New Source Performance Standards
- E Control Equipment Specifications

**APPENDIX E**  
**Control Equipment**

Air Pollution Control Equipment (applicable if -X- checked).

The following specifications need not be verified on a continuous basis, however, if requested by the Bureau, demonstration shall be shown.

None

Scrubber

Make and Model:

Reagent:

Reagent Flow Rate:

Pressure Drop (in H<sub>2</sub>O):

Minimum Gas Flow Rate at Maximum Rated Capacity (acfm):

PH:

Design Outlet Grain Loading (gr/dscf):

Design Removal Efficiency (%):

Electrostatic Precipitator (ESP)

Make and Model:

Number of Fields:

Minimum Gas Flow Rate at Maximum Rated Capacity (acfm):

Design Outlet Grain Loading (gr/dscf):

Design Removal Efficiency (%):

Cyclone     Multicyclone

Make and Model:

Pressure Drop (in H<sub>2</sub>O):

Minimum Gas Flow Rate at Maximum Rated Capacity (acfm):

Selective Non-catalytic Reduction (SNCR)

Urea     Ammonia

Make and Model:

Injection Rate at Maximum Rated Capacity (lb/hr):

Operating Temperature Range (EF):

Minimum Gas Flow Rate at Maximum Rated Capacity (acfm):

Design Removal Efficiency (%):

Selective Catalytic Reduction (SCR)

Make and Model:

Catalyst Type:

Minimum Gas Flow Rate at Maximum Rated Capacity (acfm):

Pressure Drop (in H<sub>2</sub>O):

Ammonia Injection Rate at Maximum Rated Capacity (lb/hr):

Design Removal Efficiency (%):

**APPENDIX E  
Control Equipment**

- Low NOx Burner  
Make and Model:  
Guaranteed NOx Emission Rate (lb/MM BTU):  
Design Removal Efficiency (%):
- Particulate Trap  
Make and Model:  
Design Removal Efficiency (%):
- Fabric Filter  
Make and Model:  
Number of Bags in Use:  
Air/Cloth Ratio:  
Bag Material:  
Cleaning Method:  
Pressure Drop (in H<sub>2</sub>O):  
Minimum Gas Flow Rate at Maximum Rated Capacity (acfm):  
Design Outlet Grain Loading (gr/dscf):  
Design Removal Efficiency (%):
- Oxidation Catalyst: CO efficiency: 90%; VOC efficiency: 30%

*Control Equipment Malfunction*

1. Equipment or methods which control "air pollutant" "emissions" from a "stationary source" and which are necessary to the operation of such "stationary source" in compliance with applicable "emission standards" and regulations shall be maintained in operation at all times that the "stationary source" is in operation or emitting "air pollutants". This includes instruments required by permit, order, or regulation which measure those source operating parameters which affect air pollutant emissions, air pollution control equipment, or other instruments which measure meteorological data required by permit, order or regulation.
2. No "person" shall deliberately shut down any such control equipment, method or other instruments specified in subsection 22a-174-7(a) while the "source" is in operation except for such necessary maintenance as cannot be accomplished when the "stationary source" itself is not in operation and is not emitting "air pollutants".
3. In the event of breakdown, failure, or deliberate shut down of any control equipment, method, or other instrument specified in subsection 22a-174-7(a) during which time the "stationary source" will be in operation, all reasonable measures shall be taken to assure resumption of the control equipment as soon as possible. Due diligence shall be exercised to minimize "emissions" while the control equipment or method is inoperative. In the event such shutdown of control equipment or methods is expected or may reasonably be expected to continue for longer than 72 hours, and if the "source" is to be operated at any time during that period, the "Commissioner" shall be notified promptly except that

**APPENDIX E**  
**Control Equipment**

*Control Equipment Malfunction, continued*

for a resource recovery facility such time period shall be 24 hours. Such notice shall include, but is not limited to, the following:

- a. Identification of the specific equipment or instrument taken out, or to be taken out, of service as well as its location, and, where applicable, registration or permit number;
  - b. The expected length of time that the "air pollution" control equipment or instrument will be out of service;
  - c. The nature and quantity of "emissions" of "air pollutants" likely to be emitted during the shutdown period;
  - d. Measures such as the use of offshift labor and equipment that will be taken to minimize the length of the shutdown period;
  - e. The reasons that it would be impossible or impractical to shut down the "stationary source" operation during the maintenance period;
4. The "Commissioner" may attach conditions to the operation of the "source" during the period of shutdown or breakdown.