



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	The University of Connecticut
Address	31 LeDoyt Road, Unit 3038, Storrs, CT 06269-3038
Equipment Location	Central Heating Plant
Equipment Description	English Model APP-100-250 with COEN 675 DAF32 burner (Boiler No. 9)
Town-Permit Numbers	098-0026
Premises Number	015
Stack Number	16
Prior Permit Issue Dates	Original Permit: 04/02/2001 Minor Modification: 04/15/2009 Minor Modification: 10/15/2013 Minor Modification: 02/24/2017
Collateral Condition	Part VII.F – Special Requirements has operational restrictions for the following pieces of equipment: 066, 067, 068, 584, 585, 586, 587, 588, 591, 1284, 1285, 1323, 1330, 1331, 1332, 1348 Part VII.G – Fuel Limitations for GEU-8: Subgroups 4, 5 and 6.
Revision Issue Date	January 22, 2018
Expiration Date	None

/s/Anne Gobin for _____
Robert J. Klee
Commissioner

January 22, 2018
Date

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. Equipment Design Specifications

1. Maximum Fuel Firing Rates: Natural gas: 117,101 ft³/hr
No. 2 fuel oil: 827.4 gal/hr
2. Maximum Gross Heat Input: Natural gas: 121.2 MMBtu/hr
No. 2 fuel oil: 115.5 MMBtu/hr

B. Control Equipment Design Specifications

1. Low NO_x Burner
 - a. Make and Model: COEN 675 DAF32
 - b. Guaranteed NO_x Emission Rate:
Natural gas: 0.04 lb/MMBtu
No. 2 fuel oil: 0.10 lb/MMBtu
2. Flue Gas Recirculation

C. Stack Parameters

1. Minimum Stack Height: 100 ft
2. Minimum Exhaust Gas Flow Rate: 35,850 acfm
3. Minimum Stack Exit Temperature: 335 °F
4. Minimum Distance from Stack to Property Line: 500 ft

PART II. OPERATIONAL CONDITIONS

A. Equipment

1. Fuel Types: Natural gas, No. 2 fuel oil
2. Maximum Fuel Consumption over any Consecutive 12 Month Period:
Natural gas: 772.87 million cubic feet
No. 2 fuel oil: 496,440 gallons
3. Fuel Sulfur Content (% by weight, dry basis): 0.2

PART III. ALLOWABLE EMISSION LIMITS

The Permittee shall not cause or allow this equipment to exceed the emission limits stated herein at any time.

A. Criteria Pollutants

Natural Gas

Pollutant	lb/hr	lb/MMBTU	TPY
PM ₁₀	0.61	0.005	2.01
SO ₂	0.12	0.001	0.40
NO _x	4.85	0.040	16.01
VOC	0.34	0.003	1.12
CO	3.03	0.025	10.00

No. 2 Fuel Oil

Pollutant	lb/hr	lb/MMBTU	TPY
PM ₁₀	5.78	0.05	1.73
SO ₂	26.57	0.23	7.97
NO _x	11.55	0.10	3.47
VOC	0.81	0.01	0.24
CO	4.62	0.04	1.39
Pb	0.001	9.0E-6	0.0003

Total Annual Criteria Pollutants Emissions:

Pollutant	TPY
PM ₁₀	3.74
SO ₂	8.37
NO _x	19.48
VOC	1.36
CO	11.39

B. Hazardous Air Pollutants

This equipment shall not cause an exceedance of the Maximum Allowable Stack Concentration (MASC) for any hazardous air pollutant (HAP) emitted from the English Model APP-100-250 with COEN 675 DAF32 burner boiler and listed in RCSA section 22a-174-29.
[STATE ONLY REQUIREMENT]

Natural Gas

Pollutant	MASC * µg/m ³
Formaldehyde	2,592

No. 2 Fuel Oil

Pollutant	MASC * µg/m ³
Sulfuric Acid	4,321
Arsenic	10.8
Beryllium	2.03
Chromium	2,160
Nickel	1,080
Cadmium	86.4
Copper	325

* Maximum Allowable Stack Concentration, 8 hour Hazardous Limiting Value

C. Opacity

This equipment shall not exceed 20% opacity during any six minute block average as measured by 40 CFR Part 60, Appendix A, Reference Method 9.

D. Demonstration of compliance with the above emission limits may be determined by calculating the emission rates using emission factors from the following sources:

- *Manufacturer's emission factors provided by COEN Company (burner manufacturer).*
- *For calculations of emissions of lead from No. 2 fuel oil, AP-42, 5th Edition, Chapter 1.3, Supplement E, September 1998.*
- *For calculation of emissions of hazardous air pollutants, AP-42, 5th Edition, Chapter 1.3, Supplement E, September 1998; Chapter 1.4, Supplement D, March 1998.*
- *Sulfuric acid emissions are based on a DEEP emission factor (2.45 x S lb/1,000 gallons of oil) where S represents the sulfur content.*

The commissioner may require 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 IV. MONITORING, RECORD KEEPING AND REPORTING REQUIREMENTS

A. Monitoring

1. The Permittee shall comply with the CEM requirements as set forth in RCSA section 22a-174-4. CEM shall be required for the following pollutant/operational parameters and enforced on the following basis:

Pollutant/Operational Parameter	Averaging Times	Emission Limit	Units
Opacity	six minute block	20	% Opacity
NO _x	24 hour rolling	0.040 (Natural gas) 0.10 (No. 2 fuel oil)	lb/MMBtu
O ₂	1 hour block		

2. The Permittee shall continuously monitor fuel consumption using a non-resettable totalizing fuel meter when more than one fuel supply tank is to service this source or when multiple sources are supplied by one fuel tank.

B. Record Keeping

1. The Permittee shall keep records of monthly and consecutive 12 month fuel consumption. The consecutive 12 month fuel consumption shall be determined by adding (for each fuel) the current month's fuel consumption 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 keep records of the fuel certification for each delivery of fuel oil from a bulk petroleum provider or a copy of the current contract with the fuel supplier supplying the fuel used by this equipment that includes the applicable sulfur content of the fuel as a condition of each shipment. The shipping receipt or contract shall include the date of delivery, the name of the fuel supplier, type of fuel delivered, the percentage of sulfur in such fuel, by weight, dry basis, and the method used to determine the sulfur content of such fuel.
3. The Permittee shall calculate and record the monthly and consecutive 12 month PM₁₀, SO₂, NO_x, VOC and CO 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.
4. 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.

PART V. STACK EMISSION TEST REQUIREMENTS

Stack emission testing shall be performed in accordance with the [Emission Test Guidelines](#) available on the DEEP website.

Initial stack testing shall be required for the following pollutant(s):

- NO_x Note: The Permittee shall comply with the Emission Testing and Monitoring requirements of RCSA sections 22a-174-22(k) and 22a-174-22e(l) & (m).

PART VI. OPERATION AND MAINTENANCE REQUIREMENTS

- A.** The Permittee shall operate and maintain this equipment in accordance with the manufacturer's specifications and written recommendations.
- B.** The Permittee shall properly operate the control equipment at all times that this equipment is in operation and emitting air pollutants.

PART VII. SPECIAL REQUIREMENTS

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

Title 40 CFR Part 60, Subparts Db and A

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

- B.** The Permittee shall comply with all applicable sections of the following National Emission Standards for Hazardous Air Pollutants at all times.

Title 40 CFR Part 63, Subparts JJJJJJ 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 not cause or permit the emission of any substance or combination of substances which creates or contributes to a nuisance odor beyond the property boundary of the premises that constitutes a nuisance as set forth in RCSA section 22a-174-23. [STATE ONLY REQUIREMENT]

- D.** 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 RCSA sections 22a-69-1 through 22a-69-7.4. [STATE ONLY REQUIREMENT]

- E.** To achieve the required NO_x offsets to allow the University of Connecticut to avoid the requirements of RCSA section 22a-174-3a (l) (Permit Requirements for Non-attainment areas):

- Operation of Central Heating Plant boilers 4, 5 and 6 will cease when boiler No. 9 becomes fully operational. Note: boiler Nos. 4, 5 and 6 ceased operation on February 28, 2003.
- All existing boilers (Boiler Nos. 1, 2, 3, 7 and 8) will only fire No. 2 fuel oil or natural gas.

F. Emergency Engines

The following collateral conditions apply to the following emergency engines:

1. Each of the following emergency engines **shall not exceed 500 hours of operation** over any Consecutive 12 Month Period:
 - a. EU 066:** Onan Model 35DGGB Generator Set, Serial No. L940562448, powered by Cummins Engine Model 4B3.9-G, Serial No. 45107416
Location: WPCF at Eastwood Road, Intersection of Route 275 and Eastwood Road
Construction Date: 1995
 - b. EU 067: Onan Model 35DGGB Generator Set, Serial No. L940562446,**
powered by Cummins Engine Model 4B3.9-G, Serial No. 45107553
Location: WPCF at Mansfield Apartments, Intersection of Route 275 and Route 195
Construction Date: 1995

- c. **EU 068:** Onan Model 35DGBB Generator Set, Serial No. L940562447, powered by Cummins Engine Model 4B3.9-G, Serial No. 45107521
Location: WPCF at Northwood Apartments, Corner of North Eagleville Road and Northwood Road
Construction Date: 1995
2. Each of the following emergency engines **shall not exceed 300 hours of operation** over any Consecutive 12 Month Period:
- a. **EU 584:** 160 kW LPG-fired generator
Location: Alumni Quad
Construction Date: 2002
 - b. **EU 585:** 80 kW LPG-fired generator
Location: Buckley Hall
Construction Date: 2002
 - c. **EU 586:** 60 kW LPG-fired generator
Location: Shippee Hall
Construction Date: 2002
 - d. **EU 587:** 55 kW LPG-fired generator
Location: McMahan Hall
Construction Date: 2002
 - e. **EU 588:** 100 kW Caterpillar natural gas-fired generator
Location: Hilltop (Capstone) Apartments
Construction Date: 2001
 - f. **EU 591:** 17 kW natural gas-fired generator
Location: Hilltop Dorms
Construction Date: 2002
 - g. **EU 1284:** 150 kW LPG-fired generator
Location: Floriculture Building
Construction Date: 2012
 - h. **EU 1285:** 20 kW Natural Gas-fired generator
Location: President's Residence
Construction Date: 2012
 - i. **EU 1323:** 65 kW Diesel-fired generator
Location: WHUS Radio Tower behind Charter Oak Apartments
Construction Date: 2015
 - j. **EU 1330, 1331 and 1332:** Three - 400 kW Natural gas-fired generators
Location: Putnam Refectory
Construction Date: 2016

- k. **EU 1348:** 400 kW Natural gas-fired generator
Location: Innovation Partnership Building
Construction Date: 2017
- 3. The Permittee shall operate each engine as an emergency engine as defined in RCSA §§22a-174-22 and 22a-174-22e.
- 4. The Permittee shall monitor and keep records of monthly and consecutive 12 month period operating hours for each emergency engine listed above. The 12 month consecutive time period shall be determined by adding (for each emergency engine) the current month's operating hours to that of the previous 11 months. The Permittee shall make these calculations within 30 days of the end of the previous month.
- 5. The Permittee shall keep records on the premises indicating continual compliance with the 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 years, whichever is less.

G. Fuel Limitations for GEU-8

- 1. The following equipment shall not exceed the following fuel consumption limits over any consecutive 12 month period:
 - a. Subgroup 4:
Equipment: All natural gas fired heating equipment
Location: **Next Generation Connecticut Hall**
Maximum Fuel Consumption over any Consecutive 12 Month Period: 28,905,372 ft³ for all heating equipment at this location combined
 - b. Subgroup 5:
Equipment: All natural gas-fired heating equipment
Location: **Northwood Apartments**
Maximum Fuel Consumption over any Consecutive 12 Month Period: 39,104,640 ft³ for all heating equipment at this location combined
 - c. Subgroup 6:
Equipment: All natural gas-fired heating equipment
Location: **Innovation Partnership Building**
Maximum Fuel Consumption over any Consecutive 12 Month Period: 70,693,200 ft³ for all heating equipment at this location combined
 - d. The Permittee shall monitor and keep records of monthly and consecutive 12 month period of fuel consumption for each Subgroup of equipment at the locations listed above. These records shall be obtained from monthly utility billing records. The consecutive 12 months fuel consumption shall be calculated by adding the fuel consumption from the current month to the fuel consumption obtained from the previous 11 months of billing records. The Permittee shall make these calculations within 30 days of the end of the previous month.
 - e. The Permittee shall keep records on the premises indicating continual compliance with the 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 years, whichever is less.

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 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 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 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.

- 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.