EASTERN KENTUCKY UNIVERSITY

Serving Kentuckians Since 1906

March 6, 2024

Mr. Zachary Bittner
Supervisor Combustion Section
Kentucky Division for Air Quality
300 Sower Boulevard, First Floor
Frankfort, KY 40601

Electronically Submitted via EEC eForms

RE: 502(b)(10) Application – Eastern Kentucky University, AI 2820

Dear Mr. Bittner:

Eastern Kentucky University (EKU) located in Richmond, Ky. operates under a conditional major operating permit no. F-20-006 R3 that was issued December 4, 2023.

EKU has prepared this 502(b)(10) application to notify the Division for Air Quality (the Division) of the replacement of one (1) natural gas-fired indirect heater exchanger at the Black Building. This modification will result in a slight decrease in the facility's potential emissions.

SUMMARY OF PLANNED FACILITY CHANGES

IA 73 – Black Bldg

EKU plans to install and start up one (1) Raypak natural gas hot water heater rated at 0.825 MMBtu/hr in the Black Building in March 2024. The unit will replace the 0.962 boiler installed in 2008 and listed in the current permit under Insignificant Activities.

PERMIT APPLICATION DISCUSSION

EKU has included the following forms for consideration of this requested change at the facility:

- DEP 7007AI – Administrative Information (502(b)(10) Application)
- DEP 7007DD – Insignificant Activities
    - Manufacturer's specification data sheets for Raypak natural gas indirect heat exchanger
- DEP 7007N – Source Emissions Profile

- Emission factors (AP42)
- Emission calculations based on 8,760 hours of operation

DRAFT PERMIT

EKU has included with this application recommended draft language in the permit section related to "Insignificant Activities." All the applicable regulations for EKU's current units in this permit section will apply to the new unit. The air permit sections that did not change or were unaffected by the planned changes are not included in this submittal.

502(b)(10) APPLICABILITY

Based on the information above, we believe that this request falls under the authority of the 502(b)(10) application. With this letter, the facility is informing the Division at least seven (7) working days prior to making the requested change. Please contact me if you have any questions concerning this information.

Sincerely,

Dekia Gather
Director of Environmental Health and Safety

CC: Bryan Makinen, EKU, AVP for Facilities Management and Safety
Lucy Pacholik, PE, Tetra Tech

Enclosures: Permit Application Forms

Division for Air Quality

300 Sower Boulevard

Frankfort, KY 40601

(502) 564-3999

DEP7007AI

Administrative Information

___ Section AI.1: Source Information

___ Section AI.2: Applicant Information

___ Section AI.3: Owner Information

___ Section AI.4: Type of Application

___ Section AI.5: Other Required Information

___ Section AI.6: Signature Block

___ Section AI.7: Notes, Comments, and Explanations

Additional Documentation

___ Additional Documentation attached

Source Name: **Eastern Kentucky University**

KY EIS (AFS) #: **21-151-00007**

Permit #: **F-20-006 R3**

Agency Interest (AI) ID: **2820**

Date: **3/6/2024**

Section AI.1: Source Information

Physical Location Address:	**Street:**	521 Lancaster Avenue; Adams House				
	City:	Richmond	**County:**	Madison	**Zip Code:**	40475-3102
Mailing Address:	**Street or P.O. Box:**	521 Lancaster Avenue				
	City:	Richmond	**State:**	KY	**Zip Code:**	40475-3102

Standard Coordinates for Source Physical Location

Longitude: 37.73816 (decimal degrees) **Latitude:** -84.29844 (decimal degrees)

Primary (NAICS) Category: Colleges, Universities, and Professional Schools **Primary NAICS #:** 611310.00

Classification (SIC) Category: Colleges, Universities, and Professional Schools

Primary SIC #: 8221

Briefly discuss the type of business conducted at this site: Educational Institution

Description of Area Surrounding Source: ☐ Rural Area ☐ Industrial Park ☑ Residential Area ☐ Urban Area ☐ Industrial Area ☑ Commercial Area

Is any part of the source located on federal land? ☐ Yes ☐ No

Number of Employees: 1640

Approximate distance to nearest residence or commercial property: *200 ft*

Property Area: **892 ac**

Is this source portable? ☐ Yes ☑ No

What other environmental permits or registrations does this source currently hold or need to obtain in Kentucky?

NPDES/KPDES:	☑ Currently Hold	☐ Need	☐ N/A
Solid Waste:	☐ Currently Hold	☐ Need	☐ N/A
RCRA:	☑ Currently Hold	☐ Need	☐ N/A
UST:	☐ Currently Hold	☐ Need	☐ N/A

Type of Regulated Waste Activity:

☑ Mixed Waste Generator ☐ Generator ☐ Recycler ☐ Other: _____

☐ U.S. Importer of Hazardous Waste ☐ Transporter ☐ Treatment/Storage/Disposal Facility ☐ N/A

Section AI.2: Applicant Information

Applicant Name: Dekia Gaither

Title: (if individual) Director of Environmental Health and Safety

Mailing Address:
Street or P.O. Box: 521 Lancaster Avenue; Adams House
City: Richmond **State:** KY **Zip Code:** 40475-3102

Email: (if individual) Dekia.Gaither@eku.edu

Phone: (859) 622-3437

Technical Contact

Name: same as above

Title:

Mailing Address:
Street or P.O. Box:
City: **State:** **Zip Code:**

Email:

Phone:

Air Permit Contact for Source

Name: Bryan Makinen

Title: Executive Director of Public Safety & Risk Management

Mailing Address:
Street or P.O. Box: 424 Lancaster Avenue, Adams House
City: Richmond **State:** KY **Zip Code:** 40475-3102

Email: Bryan.Makinen@eku.edu

Phone: (859) 622-2421

Section AI.3: Owner Information

☑ **Owner same as applicant**

Name: _____

Title: _____

Mailing Address: **Street or P.O. Box:** _____

City: _____ **State:** _____ **Zip Code:** _____

Email: _____

Phone: _____

List names of owners and officers of the company who have an interest in the company of 5% or more.

Name	Position

Section AI.4: Type of Application

Current Status: ☐ Title V ☑ Conditional Major ☐ State-Origin ☐ General Permit ☐ Registration ☐ None

Requested Action: *(check all that apply)*

☐ Name Change	☐ Initial Registration	☐ Significant Revision	☐ Administrative Permit Amendment
☐ Renewal Permit	☐ Revised Registration	☐ Minor Revision	☐ Initial Source-wide OperatingPermit
☑ 502(b)(10)Change	☐ Extension Request	☐ Addition of New Facility	☐ Portable Plant Relocation Notice
☐ Revision	☐ Off Permit Change	☐ Landfill Alternate Compliance Submittal	☐ Modification of Existing Facilities
☐ Ownership Change	☐ Closure		

Requested Status: ☐ Title V ☑ Conditional Major ☐ State-Origin ☐ PSD ☐ NSR ☐ Other: _____

Is the source requesting a limitation of potential emissions? ☑ Yes ☐ No

Pollutant:	Requested Limit:	Pollutant:	Requested Limit:
☐ Particulate Matter		☐ Single HAP	
☐ Volatile Organic Compounds (VOC)		☐ Combined HAPs	
☑ Carbon Monoxide	90 tpy	☐ Air Toxics (40 CFR 68, Subpart F)	
☑ Nitrogen Oxides	90 tpy	☐ Carbon Dioxide	
☐ Sulfur Dioxide		☐ Greenhouse Gases (GHG)	
☐		☐	

For New Construction:

Proposed Start Date of Construction: *(MM/YYYY)* 03/2024

Proposed Operation Start-Up Date: *(MM/YYYY)* 03/2024

For Modifications:

Proposed Start Date of Modification: *(MM/YYYY)*

Proposed Operation Start-Up Date: *(MM/YYYY)*

Applicant is seeking coverage under a permit shield. ☐ **Yes** ☑ **No**

Identify any non-applicable requirements for which permit shield is sought on a separate attachment to the application.

Section AI.5 Other Required Information

Indicate the documents attached as part of this application:

- ☐ DEP7007A Indirect Heat Exchangers and Turbines
- ☐ DEP7007B Manufacturing or Processing Operations
- ☐ DEP7007C Incinerators and Waste Burners
- ☐ DEP7007F Episode Standby Plan
- ☐ DEP7007J Volatile Liquid Storage
- ☐ DEP7007K Surface Coating or Printing Operations
- ☐ DEP7007L Mineral Processes
- ☐ DEP7007M Metal Cleaning Degreasers
- ☑ DEP7007N Source Emissions Profile
- ☐ DEP7007P Perchloroethylene Dry Cleaning Systems
- ☐ DEP7007R Emission Offset Credit
- ☐ DEP7007S Service Stations
- ☐ DEP7007T Metal Plating and Surface Treatment Operations
- ☐ DEP7007V Applicable Requirements and Compliance Activities
- ☐ DEP7007Y Good Engineering Practice and Stack Height Determination
- ☐ DEP7007AA Compliance Schedule for Non-complying Emission Units
- ☐ DEP7007BB Certified Progress Report
- ☐ DEP7007CC Compliance Certification
- ☑ DEP7007DD Insignificant Activities
- ☐ DEP7007EE Internal Combustion Engines
- ☐ DEP7007FF Secondary Aluminum Processing
- ☐ DEP7007GG Control Equipment
- ☐ DEP7007HH Haul Roads
- ☐ Confidentiality Claim
- ☐ Ownership Change Form
- ☐ Secretary of State Certificate
- ☐ Flowcharts or diagrams depicting process
- ☐ Digital Line Graphs (DLG) files of buldings, roads, etc.
- ☐ Site Map
- ☐ Map or drawing depicting location of facility
- ☐ Safety Data Sheet (SDS)
- ☐ Emergency Response Plan
- ☑ Other: Boilier Specification Sheets and Emissions Calculation Sheets, Permit Markup

Section AI.6: Signature Block

I, the undersigned, hereby certify under penalty of law, that I am a responsible official*, and that I have personally examined, and am familiar with, the information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the information is on knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false or incomplete information, including the possibility of fine or imprisonment.

Authorized Signature

03/06/2024

Date

Dekia Gaither

Type or Printed Name of Signatory

Director of Environmental Health and Safety

Title of Signatory

*Responsible official as defined by 401 KAR 52:001.

Section AI.7: Notes, Comments, and Explanations

Division for Air Quality
300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007DD

Insignificant Activities

___ Section DD.1: Table of Insignificant Activities
___ Section DD.2: Signature Block
___ Section DD.3: Notes, Comments, and Explanations

Source Name: **Eastern Kentucky University**
KY EIS (AFS) #: **21- 151-00007**
Permit #: **F-20-006 R3**
Agency Interest (AI) ID: **2820**
Date: **3/6/2024**

Section DD.1: Table of Insignificant Activities

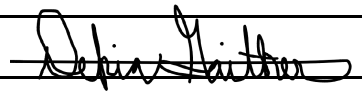
*Identify each activity with a unique Insignificant Activity number (IA #); for example: 1, 2, 3… etc.

Insignificant Activity #	Description of Activity including Rated Capacity	Serial Number or Other Unique Identifier	Applicable Regulation(s)	Calculated Emissions
IA 73	One (1) 0.825 MMBtu/hr Natural Gas Boiler - Black Bldg	Raypak H3-0824/ SN V442200159	401 KAR 52:030	See Spreadsheet attached to DEP 7007N

Insignificant Activity #	Description of Activity including Rated Capacity	Serial Number or Other Unique Identifier	Applicable Regulation(s)	Calculated Emissions

Section DD.2: Signature Block

I, THE UNDERSIGNED, HEREBY CERTIFY UNDER PENALTY OF LAW, THAT I AM A RESPONSIBLE OFFICIAL, AND THAT I HAVE PERSONALLY EXAMINED, AND AM FAMILIAR WITH, THE INFORMATION SUBMITTED IN THIS DOCUMENT AND ALL ITS ATTACHMENTS. BASED ON MY INQUIRY OF THOSE INDIVIDUALS WITH PRIMARY RESPONSIBILITY FOR OBTAINING THE INFORMATION, I CERTIFY THAT THE INFORMATION IS ON KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE OR INCOMPLETE INFORMATION, INCLUDING THE POSSIBILITY OF FINE OR IMPRISONMENT.



Authorized Signature

03/06/2024

Date

By:

Dekia Gaither

Type/Print Name of Siguatory

Director of EHS

Title of Siguatory

Section DD.3: Notes, Comments, and Explanations

Raytherm™

Engineered for simplicity, durability, and reliability.

ATMOSPHERIC

511 MBTUH - 4 MMBTUH

H 82% Efficiency
WH 82% Efficiency

Maximum Durability

- Reliable and cost-effective copper fin-tube heat exchanger design
- Rugged bronze headers resist corrosion and are easily removed for servicing
- Corrosion-resistant steel fittings are brush-galvanized against rust to extend the life of the unit
- Polytuf powder-coat finish jacket for indoor/outdoor performance and durability

Reliable Performance

- Spark-to-pilot ignition for reliable startup
- Stainless steel burners for precise combustion at all firing rates, quiet operation, and corrosion resistance
- Floating return header protects the heat exchanger from thermal shock

Easy to Service

- Enclosed controls are easily accessed behind a removable door for inspection and servicing
- Expertly designed tube heat exchanger eliminates repair and maintenance problems while delivering reliable heating and cost savings
- Slide-out burner tray for easy inspection and servicing

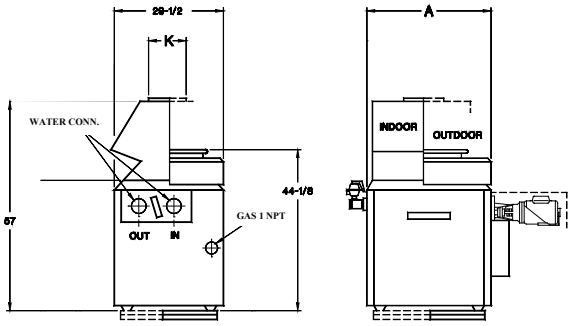
Expert Support: With decades of experience, Raypak's team of experts is available to help with every aspect of the job, from sizing to post-installation technical support

Applicable for heating in schools, military bases, hotels, apartment buildings, and more.

Optional Features

- ☑ Low water cut-off probe
- ☑ High and low gas pressure switches

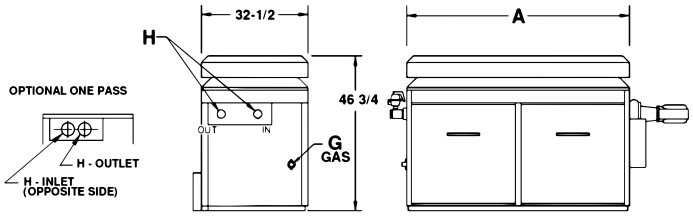
Raytherm - Type H & WH
Models 514 - 4001



Models 514-824 (Indoor/Outdoor)

Model	MBTUH*		Dimensions (in.)					
	Input	Output	A Width	Overall Height Indoor	Overall Height Outdoor	Depth	Water Conn.	K Flue Dia.
514	511.5	419.4	32-3/4	57	44-1/8	29-1/2	2	10
624	627	514.2	37-1/2					12
724	726	595.3	41-5/8					
824	825	676.5	45-3/4					14

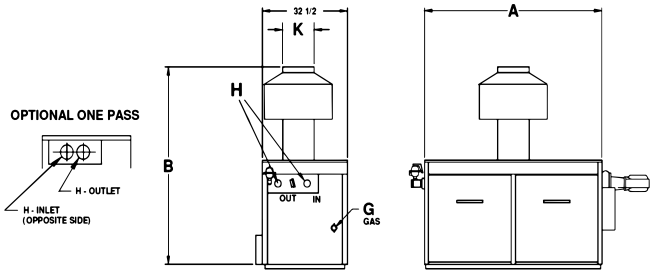
*For natural gas units; for propane units, use .94 multiplier.



Models 926-1758 (Outdoor)

Model	MBTUH*		Dimensions (in.)				
	Input	Output	A Width	Overall Height	Depth	G Gas Conn.	H Water Conn.
926	926	759.3	52-3/8	46-3/4	32-1/2	1	2-1/2 (b)
1083	1083	888.1	59-1/4			1 (a)	
1178	1178	966	63-5/8				
1287	1287	1055.3	68-5/8			1-1/4	
1414	1413	1159	74-7/8				
1571	1570	1287.4	81-1/8				
1758	1758	1441.6	89-3/8				

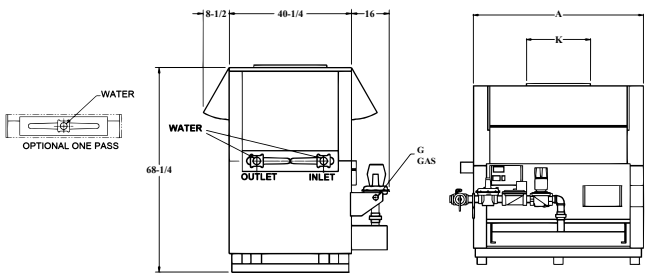
*For natural gas units; for propane units, use .94 multiplier
(a) 1" or 1-1/4", depending on boiler type or code requirements
(b) 3" NPT on single-pass option



Models 962-1826 (Indoor)

Model	MBTUH*		Dimensions (in.)					
	Input	Output	A Width	B Overall Height	Depth	G Gas Conn.	H Water Conn.	K Flue Dia.
962	961.7	788.6	52-3/8	76-1/8 (a)	32-1/2	1	2-1/2	14
1125	1124.7	922.3	59-1/4			1 (b)		16
1223	1222.5	1002.5	63-5/8					
1336	1336.6	1083	68-5/8	80-1/8 (a)		1-1/4		18
1468	1467	1203	74-7/8					
1631	1630	1336.6	81-1/8					
1826	1825.6	1497	89-3/8					20

*For natural gas units; for propane units, use .94 multiplier
(a) Add 1-1/8" to overall height for combustible floor shield option
(b) 1" or 1-1/4" contingent on boiler type or code requirements



Models 2100-4001 (Indoor)

Model	MBTUH*		Dimensions (in.)					
	Input	Output	A Width	Overall Height	Overall Depth	G Gas Conn.	Water Conn.**	K Flue Dia.
2100	2100	1722	61	68-1/4	64-3/4	(a)	3	24
2500	2499	2049.2	70					26
3001	3000	2460	81-1/4			2		28
3500	3500	2870	92-1/2					30
4001	4000	3280	103-3/4					32

*For natural gas and propane
**4" on single-pass boilers (Type H)
(a) 1-1/2" or 2" contingent on boiler type code requirements

Learn more about **Raytherm boilers at Raypak.com**

Learn more about **Raytherm water heaters at Raypak.com**

 1100.15A-Raytherm Effective 11-01-21 Replaces 05-01-06

Division for Air Quality

300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007N

Source Emissions Profile

__ Section N.1: Emission Summary
__ Section N.2: Stack Information
__ Section N.3: Fugitive Information
__ Section N.4: Notes, Comments, and Explanations

Additional Documentation

___ Complete DEP7007AI

Source Name: **Eastern Kentucky University**

KY EIS (AFS) #: **21- 151-00007**

Permit #: **F-20-006 R3**

Agency Interest (AI) ID: **2820**

Date: **3/6/2024**

N.1: Emission Summary

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity *(SCC Units/hour)*	Pollutant	Uncontrolled Emission Factor *(lb/SCC Units)*	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency *(%)*	Control Efficiency *(%)*	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential *(lb/hr)*	Controlled Potential *(lb/hr)*	Uncontrolled Potential *(tons/yr)*	Controlled Potential *(tons/yr)*
IA 73	Black Bldg	N/A	0.825 MMBtu/hr NG Boiler	n/a	n/a	IA 73	0.0008 MMSCF/hr	See attached	See attached	AP-42 Table 1.4-1, 2, 3, 4	100.00%	0.00%	See attached	See attached	See attached	See attached

Section N.2: Stack Information

UTM Zone:

Stack ID	Identify all Emission Units (with Process ID) and Control Devices that Feed to Stack	Stack Physical Data			Stack UTM Coordinates		Stack Gas Stream Data		
		Equivalent Diameter *(ft)*	Height *(ft)*	Base Elevation *(ft)*	Northing *(m)*	Easting *(m)*	Flowrate *(acfm)*	Temperature *(° F)*	Exit Velocity *(ft/sec)*
IA 73	Black Bldg	1.17	24	972	4180039.93	738687.38	<50	<250	

Section N.3: Fugitive Information

UTM Zone:

Emission Unit #	Emission Unit Name	Process ID	Area Physical Data		Area UTM Coordinates		Area Release Data	
			Length of the X Side *(ft)*	Length of the Y Side *(ft)*	Northing *(m)*	Easting *(m)*	Release Temperature *(°F)*	Release Height *(ft)*

Section N.4: Notes, Comments, and Explanations

Eastern Kentucky University AI 2820
Emission Calculations

Replacement Natural Gas Fired Boiler - Black Building - Insignificant Activities (<1.0 MMBtu/hr)

Boiler Rated at:	0.825	MMBtu/hr	**Max Usage:**	8,760	hr/yr
			Actual Usage*:	8,760	hr/yr
Heating Value:	1,020	Btu/scf			

Heater Emission Factors			
Pollutant	**Emission Factor**		**Data Source**
CO	84	lb/10^6scf	AP 42, Table 1.4-1
NO_x	100	lb/10^6scf	AP 42, Table 1.4-1
CO_2	120000	lb/10^6scf	AP 42, Table 1.4-2
Lead	0.0005	lb/10^6scf	AP 42, Table 1.4-2
N_2O	2.20	lb/10^6scf	AP 42, Table 1.4-2
PM	7.6	lb/10^6scf	AP 42, Table 1.4-2
PM_{10}	7.6	lb/10^6scf	AP 42, Table 1.4-2
$PM_{2.5}$	7.6	lb/10^6scf	AP 42, Table 1.4-2
SO_2	0.6	lb/10^6scf	AP 42, Table 1.4-2
TOC	11.0	lb/10^6scf	AP 42, Table 1.4-2
Methane	2.3	lb/10^6scf	AP 42, Table 1.4-2
VOC	5.5	lb/10^6scf	AP 42, Table 1.4-2
Total HAP	1.89	lb/10^6scf	AP 42, Table 1.4-3 & 4
Acenaphthene	1.80E-06	lb/10^6scf	AP 42, Table 1.4-3
Acenaphthylene	1.80E-06	lb/10^6scf	AP 42, Table 1.4-3
Anthracene	2.40E-06	lb/10^6scf	AP 42, Table 1.4-3
Arsenic	2.00E-04	lb/10^6scf	AP 42, Table 1.4-4
Benz(a)anthracene	1.80E-06	lb/10^6scf	AP 42, Table 1.4-3
Benzene	2.10E-03	lb/10^6scf	AP 42, Table 1.4-3
Benzo(a)pyrene	1.20E-06	lb/10^6scf	AP 42, Table 1.4-3
Benzo(b)fluoranthene	1.80E-06	lb/10^6scf	AP 42, Table 1.4-3
Benzo(g,h,i)perylene	1.20E-06	lb/10^6scf	AP 42, Table 1.4-3
Benzo(k)fluoranthene	1.80E-06	lb/10^6scf	AP 42, Table 1.4-3
Beryllium	1.20E-05	lb/10^6scf	AP 42, Table 1.4-4
Cadmium	1.10E-03	lb/10^6scf	AP 42, Table 1.4-4
Chromium	1.40E-03	lb/10^6scf	AP 42, Table 1.4-4
Chrysene	1.80E-06	lb/10^6scf	AP 42, Table 1.4-3
Cobalt	8.40E-05	lb/10^6scf	AP 42, Table 1.4-4
Dibenzo(a,h)anthracene	1.20E-06	lb/10^6scf	AP 42, Table 1.4-3
Dichlorobenzene	1.20E-03	lb/10^6scf	AP 42, Table 1.4-3
7,12-Dimethylbenz(a)anth	1.60E-05	lb/10^6scf	AP 42, Table 1.4-3
Fluoranthene	3.00E-06	lb/10^6scf	AP 42, Table 1.4-3
Fluorene	2.80E-06	lb/10^6scf	AP 42, Table 1.4-3
Formaldehyde	7.50E-02	lb/10^6scf	AP 42, Table 1.4-3
Hexane	1.80E+00	lb/10^6scf	AP 42, Table 1.4-3
Indeno(1,2,3-cd)pyrene	1.80E-06	lb/10^6scf	AP 42, Table 1.4-3
Manganese	3.80E-04	lb/10^6scf	AP 42, Table 1.4-4
Mercury	2.60E-04	lb/10^6scf	AP 42, Table 1.4-4
2-Methylnaphthalene	2.40E-05	lb/10^6scf	AP 42, Table 1.4-3
3-Methylchloranthrene	1.80E-06	lb/10^6scf	AP 42, Table 1.4-3
Naphthalene	6.10E-04	lb/10^6scf	AP 42, Table 1.4-3
Nickel	2.10E-03	lb/10^6scf	AP 42, Table 1.4-4
Phenanathrene	1.70E-05	lb/10^6scf	AP 42, Table 1.4-3
Pyrene	5.00E-06	lb/10^6scf	AP 42, Table 1.4-3
Selenium	2.40E-05	lb/10^6scf	AP 42, Table 1.4-4
Toluene	3.40E-03	lb/10^6scf	AP 42, Table 1.4-3

Combined Annual Emissions Calculations (1 Replacement Boiler)					
Pollutant	**Maximum Usage (8,760 hr/yr)**		**Actual Usage* (8,760 hr/yr)**		**Pollutant**
	lb/yr	ton/yr	lb/yr	ton/yr	
CO	595.16	2.98E-01	595.16	0.30	**CO**
NO_x	708.53	3.54E-01	708.53	0.35	**NO_x**
CO_2	850,235.29	4.25E+02	850,235.29	425.12	**CO_2**
Lead	3.54E-03	1.77E-06	3.54E-03	0.00	**Lead**
N_2O	15.59	7.79E-03	15.59	0.01	**N_2O**
PM	53.85	2.69E-02	53.85	0.03	**PM**
PM_{10}	53.85	2.69E-02	53.85	0.03	**PM_{10}**
$PM_{2.5}$	53.85	2.69E-02	53.85	0.03	**$PM_{2.5}$**
SO_2	4.25	2.13E-03	4.25	0.00	**SO_2**
TOC	77.94	3.90E-02	77.94	0.04	**TOC**
Methane	16.30	8.15E-03	16.30	0.01	**Methane**
VOC	38.97	1.95E-02	38.97	0.02	**VOC**
Total HAP	13.38	6.69E-03	13.38	0.01	**Total HAP**

SECTION C - INSIGNIFICANT ACTIVITIES

The following listed activities have been determined to be insignificant activities for this source pursuant to 401 KAR 52:030, Section 6. Although these activities are designated as insignificant the permittee must comply with the applicable regulation. Process and emission control equipment at each insignificant activity subject to an opacity standard shall be inspected monthly and a qualitative visible emissions evaluation made. Results of the inspection, evaluation, and any corrective action shall be recorded in a log.

Description Generally	**Applicable Regulation**
1. Woodworking Shop	401 KAR 61:020
2. Diesel fuel tank	NA

3. Six Natural Gas Fired Kilns: NA

Output Rating (MMBtu/hr)	Location
0.03	Campbell Rm 118
0.374	Campbell Rm 103
0.1	Campbell Sculptor Patio
0.4	Campbell Sculptor Patio
0.3	South of McKinney
0.327	Campbell 103

4. Sixty-Eight Natural Gas Fired Indirect Heat Exchangers (less than 1 MMBtu/hr each): NA
Total Capacity 17.5 MMBtu/hr

Output Rating (MMBtu/hr)	Location	Year
0.837	Gibson	1991
0.720	Sullivan	1998
0.960	Burnam	1997
0.840	Moberly	1994
0.250	Weaver	1997
0.500	McKinney Skills	2001
0.685	Presnell	1972
0.685	Presnell	1972
0.999	Telford Hall	2006
~~0.962~~	~~Black~~	~~2008~~
0.999	Chapel of Meditation	1998
0.999	McGregor Hall	2013
0.999	McGregor Hall	2013
0.076	Blanton House	2006
0.13	Arlington Shed	2013
0.1999	Arlington Swim Lockers	1993
0.1999	Arlington Swim Lockers	1993
0.1999	Arlington Swim Lockers	1993
0.45	Arlington House	1969

SECTION C - INSIGNIFICANT ACTIVITIES (CONTINUED)

Output Rating (MMBtu/hr)	Location	Year
0.52	Arlington House	2004
0.1999	Arlington Pro House	2018
0.5	Martin Hall	2017
0.5	Martin Hall	2017
0.5	Martin Hall	2017
0.5	North Hall	2016
0.5	North Hall	2016
0.5	North Hall	2016
0.1999	Begley Bldg Visitor's Locker Room	2016
0.1999	Begley Bldg Visitor's Locker Room	2016
16 @ 0.25	Greenhouse Bldgs 1-4	2004
0.20	Greenhouse Bldg 5	2004
0.20	Greenhouse Bldg 5	2004
0.20	Greenhouse Bldg 6	2004
0.15	Greenhouse Bldg 6	1996
0.25	Greenhouse Bldg 7	1992
0.25	Greenhouse Bldg 7	1992
0.199	Weaver	2019
8 @ 0.199	Begley Bldg	2019
0.4999	Case Dining Hall	2017
0.4999	Case Dining Hall	2017
0.999	Student Health	2021
0.999	Model Lab School	2023
0.999	Model Lab School	2023
0.999	Donovan Building	2023
0.999	Donovan Building	2023
0.99	Whitlock Building	2023
0.399	Burnam Hall	2021
0.399	Burnam Hall	2021
0.6	Clay Hall	2023
0.6	Clay Hall	2023
0.825	**Black**	**2024**

EASTERN KENTUCKY UNIVERSITY

Serving Kentuckians Since 1906

September 25, 2024

Mr. Zachary Bittner
Supervisor Combustion Section
Kentucky Division for Air Quality
300 Sower Boulevard, First Floor
Frankfort, KY 40601

Electronically Submitted via EEC eForms

RE: Minor Air Permit Revision Application – Eastern Kentucky University, AI 2820

Dear Mr. Bittner:

Eastern Kentucky University (EKU) located in Richmond, Ky. operates under a conditional major operating permit no. F-20-006 R2 that was issued May 31, 2021.

EKU has prepared this application to request a minor permit revision to register six (6) natural gas-fired indirect heater exchangers and one (1) natural gas-fired emergency generator. These modifications will result in a minor increase of the facility's potential emissions; however, EKU will continue to monitor natural gas usage such that facility-wide CO and NOx emissions stay below the limitations specified in the current air permit (90 tpy each).

SUMMARY OF PLANNED FACILITY CHANGES

EU 109-111 – Alumni Coliseum

EKU plans to install three (3) Lochinvar LO-NOx natural gas boilers, each rated at 3.0 MMBtu/hr, at Alumni Coliseum in September 2024. The 2.0 MMBtu/hr Weil-McLain unit installed in 2010 (EU 49) will stay operational. EKU plans to start up the new units in October 2024.

IA 74-76 – Keene Hall

EKU plans to install three (3) Lochinvar LO-NOx natural gas water heaters, each rated at 0.5 MMBtu/hr, at Keene Hall in September 2024 with a start-up date in October 2024. These are considered insignificant units.

EG 62 – Keen Johnson

EKU plans to install one (1) Cummins natural gas-fired emergency generator rated at 25 kW at the Keen Johnson building in September 2024, with a start-up date in October 2024. The generator will only be used for emergency purposes and will run for a maximum of 100 hours per year. The

Cummins engine is EPA Certified for Stationary Emergency Application. The existing 15 kW natural gas emergency generator listed on the current air permit (EG 07) has been removed from the facility and will be replaced with this new unit.

PERMIT APPLICATION DISCUSSION

EKU has included the following permit application forms for consideration of this requested change at the facility:

- DEP 7007AI – Administrative Information (minor permit revision)
- DEP 7007A – Indirect Heat Exchangers and Turbines
- DEP 7007DD – Insignificant Activities
    - Manufacturer's specification data sheets for Lochinvar natural gas indirect heat exchangers
- DEP 7007EE – Internal Combustion Engines
    - Manufacturer's specification data sheet for Cummins engine
    - EPA Certification for engine family
- DEP 7007N – Source Emissions Profile
    - Emission factors (AP42)
    - Emission calculations based on 8,760 hours of operation for indirect heat exchangers and 500 hours of operation for emergency generator.
- DEP 7007V – Applicable Requirements and Compliance Activities
    - Draft FESOP language for “New Natural Gas Fired Indirect Heat Exchangers,” “Insignificant Activities,” and “New Natural Gas Emergency Generators”.
- Note — Form DEP 7007GG is not included because there are no controls on these units.

DRAFT PERMIT

EKU has included with this application recommended draft language in the permit section related to the "New Natural Gas Fired Indirect Heat Exchangers,” “New Natural Gas Emergency Generators,” and “Insignificant Activities.” All the applicable regulations for EKU's current units in these permit sections will apply to the new units installed in the three buildings. The air permit sections that did not change or were unaffected by the planned changes are not included in this submittal.

Upon your review of the application, please call if you need additional information or clarification.

MINOR REVISION CERTIFICATION

With my signature below, I am certifying that the changes described in this application meet the criteria for use of minor permit revision procedures at 401 KAR 52:030, Section 14 and I further request that the Division use this minor revision procedure for this application.

Sincerely,

Dekia Gaither
Director of Environmental Health and Safety

CC: Bryan Makinen, EKU, Chief Campus Operations Officer
Lucy Pacholik, PE, Tetra Tech

Enclosures: Permit Application Forms

Division for Air Quality

300 Sower Boulevard

Frankfort, KY 40601

(502) 564-3999

DEP7007AI

Administrative Information

___ Section AI.1: Source Information

___ Section AI.2: Applicant Information

___ Section AI.3: Owner Information

___ Section AI.4: Type of Application

___ Section AI.5: Other Required Information

___ Section AI.6: Signature Block

___ Section AI.7: Notes, Comments, and Explanations

Additional Documentation

___ Additional Documentation attached

Source Name: **Eastern Kentucky University**

KY EIS (AFS) #: **21-** **151-00007**

Permit #: **F-20-006 R3**

Agency Interest (AI) ID: **2820**

Date: **9/23/2024**

Section AI.1: Source Information

Physical Location Address:	**Street:**	521 Lancaster Avenue; Adams House				
	City:	Richmond	**County:**	Madison	**Zip Code:**	40475-3102
Mailing Address:	**Street or P.O. Box:**	521 Lancaster Avenue				
	City:	Richmond	**State:**	KY	**Zip Code:**	40475-3102

Standard Coordinates for Source Physical Location

Longitude: -84.29844 (decimal degrees) **Latitude:** 37.73816 (decimal degrees)

Primary (NAICS) Category: Colleges, Universities, and Professional Schools **Primary NAICS #:** 611310.00

#

Classification (SIC) Category: Colleges, Universities, and Professional Schools **Primary SIC #:** 8221

Briefly discuss the type of business conducted at this site: Educational Institution

Description of Area Surrounding Source: ☐ Rural Area ☐ Industrial Park ☑ Residential Area ☐ Urban Area ☐ Industrial Area ☑ Commercial Area

Is any part of the source located on federal land? ☐ Yes ☐ No

Number of Employees: 1640

Approximate distance to nearest residence or commercial property: *200 ft*

Property Area: **892 ac**

Is this source portable? ☐ Yes ☑ No

What other environmental permits or registrations does this source currently hold or need to obtain in Kentucky?

NPDES/KPDES:	☑ Currently Hold	☐ Need	☐ N/A
Solid Waste:	☐ Currently Hold	☐ Need	☐ N/A
RCRA:	☑ Currently Hold	☐ Need	☐ N/A
UST:	☐ Currently Hold	☐ Need	☐ N/A

Type of Regulated Waste Activity:

☑ Mixed Waste Generator ☐ Generator ☐ Recycler ☐ Other: _____

☐ U.S. Importer of Hazardous Waste ☐ Transporter ☐ Treatment/Storage/Disposal Facility ☐ N/A

Section AI.2: Applicant Information

Applicant Name: Dekia Gaither

Title: (if individual) Director of Environmental Health and Safety

Mailing Address:
Street or P.O. Box: 521 Lancaster Avenue; Adams House
City: Richmond **State:** KY **Zip Code:** 40475-3102

Email: (if individual) Dekia.Gaither@eku.edu

Phone: (859) 622-3437

Technical Contact

Name: same as above

Title:

Mailing Address:
Street or P.O. Box:
City: **State:** **Zip Code:**

Email:

Phone:

Air Permit Contact for Source

Name: Bryan Makinen

Title: AVP for Facilities Mangement and Safety

Mailing Address:
Street or P.O. Box: 424 Lancaster Avenue, Adams House
City: Richmond **State:** KY **Zip Code:** 40475-3102

Email: Bryan.Makinen@eku.edu

Phone: (859) 622-2421

Section AI.3: Owner Information

☑ **Owner same as applicant**

Name: _____

Title: _____

Mailing Address: **Street or P.O. Box:** _____

City: _____ **State:** _____ **Zip Code:** _____

Email: _____

Phone: _____

List names of owners and officers of the company who have an interest in the company of 5% or more.

Name	Position

Section AI.4: Type of Application

Current Status: ☐ Title V ☑ Conditional Major ☐ State-Origin ☐ General Permit ☐ Registration ☐ None

Requested Action: *(check all that apply)*

☐ Name Change	☐ Initial Registration	☐ Significant Revision	☐ Administrative Permit Amendment
☐ Renewal Permit	☐ Revised Registration	☑ Minor Revision	☐ Initial Source-wide OperatingPermit
☐ 502(b)(10)Change	☐ Extension Request	☐ Addition of New Facility	☐ Portable Plant Relocation Notice
☐ Revision	☐ Off Permit Change	☐ Landfill Alternate Compliance Submittal	☐ Modification of Existing Facilities
☐ Ownership Change	☐ Closure		

Requested Status: ☐ Title V ☑ Conditional Major ☐ State-Origin ☐ PSD ☐ NSR ☐ Other: _____

Is the source requesting a limitation of potential emissions? ☑ Yes ☐ No

Pollutant:	Requested Limit:	Pollutant:	Requested Limit:
☐ Particulate Matter		☐ Single HAP	
☐ Volatile Organic Compounds (VOC)		☐ Combined HAPs	
☑ Carbon Monoxide	90 tpy	☐ Air Toxics (40 CFR 68, Subpart F)	
☑ Nitrogen Oxides	90 tpy	☐ Carbon Dioxide	
☐ Sulfur Dioxide		☐ Greenhouse Gases (GHG)	
☐		☐	

For New Construction:

Proposed Start Date of Construction: *(MM/YYYY)* _____

Proposed Operation Start-Up Date: *(MM/YYYY)* _____

For Modifications:

Proposed Start Date of Modification: *(MM/YYYY)* 09/2024

Proposed Operation Start-Up Date: *(MM/YYYY)* 10/2024

Applicant is seeking coverage under a permit shield. ☐ **Yes** ☑ **No**

Identify any non-applicable requirements for which permit shield is sought on a separate attachment to the application.

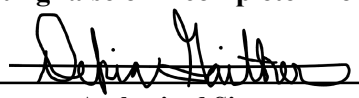
Section AI.5 Other Required Information

Indicate the documents attached as part of this application:

- ☑ DEP7007A Indirect Heat Exchangers and Turbines
- ☐ DEP7007B Manufacturing or Processing Operations
- ☐ DEP7007C Incinerators and Waste Burners
- ☐ DEP7007F Episode Standby Plan
- ☐ DEP7007J Volatile Liquid Storage
- ☐ DEP7007K Surface Coating or Printing Operations
- ☐ DEP7007L Mineral Processes
- ☐ DEP7007M Metal Cleaning Degreasers
- ☑ DEP7007N Source Emissions Profile
- ☐ DEP7007P Perchloroethylene Dry Cleaning Systems
- ☐ DEP7007R Emission Offset Credit
- ☐ DEP7007S Service Stations
- ☐ DEP7007T Metal Plating and Surface Treatment Operations
- ☑ DEP7007V Applicable Requirements and Compliance Activities
- ☐ DEP7007Y Good Engineering Practice and Stack Height Determination
- ☐ DEP7007AA Compliance Schedule for Non-complying Emission Units
- ☐ DEP7007BB Certified Progress Report
- ☐ DEP7007CC Compliance Certification
- ☑ DEP7007DD Insignificant Activities
- ☑ DEP7007EE Internal Combustion Engines
- ☐ DEP7007FF Secondary Aluminum Processing
- ☐ DEP7007GG Control Equipment
- ☐ DEP7007HH Haul Roads
- ☐ Confidentiality Claim
- ☐ Ownership Change Form
- ☐ Secretary of State Certificate
- ☐ Flowcharts or diagrams depicting process
- ☐ Digital Line Graphs (DLG) files of buldings, roads, etc.
- ☐ Site Map
- ☐ Map or drawing depicting location of facility
- ☐ Safety Data Sheet (SDS)
- ☐ Emergency Response Plan
- ☑ Other: Manufacturer Specification Sheets and Emissions Calculation Sheets

Section AI.6: Signature Block

I, the undersigned, hereby certify under penalty of law, that I am a responsible official*, and that I have personally examined, and am familiar with, the information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the information is on knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false or incomplete information, including the possibility of fine or imprisonment.



Authorized Signature

9/25/2024

Date

Dekia Gaither

Type or Printed Name of Signatory

Director of Environmental Health and Safety

Title of Signatory

*Responsible official as defined by 401 KAR 52:001.

Section AI.7: Notes, Comments, and Explanations

Division for Air Quality

300 Sower Boulevard

Frankfort, KY 40601

(502) 564-3999

DEP7007A

Indirect Heat Exchangers and Turbines

___ Section A.1: General Information

___ Section A.2: Operating and Fuel Information

___ Section A.3: Notes, Comments, and Explanations

Additional Documentation

___ Complete DEP7007AI, DEP7007N, DEP7007V, and DEP7007GG.

____ Manufacturer's specifications

Source Name: Eastern Kentucky University

KY EIS (AFS) #: 21-151-00007

Permit #: F-20-006 R3

Agency Interest (AI) ID: 2820

Date: 9/23/2024

Section A.1: General Information

Emission Unit #	Emission Unit Name	Process ID	Process Name	Identify General Type: Indirect Heat Exchanger, Gas Turbine, or Combustion Turbine	Indirect Heat Exchanger Configuration	Manufacturer	Model No./ Serial No.	Proposed/Actual Date of Construction Commencement *(MM/YYYY)*	SCC Code	SCC Units	Control Device ID	Stack ID
IA 74, 75, 76	Keene Hall	N/A	Three (3) 0.5 MMBtu/hr Natural Gas Water Heaters	Indirect Heat Exchanger	N/A	Lochnivar	SWA500N	8/1/2024	10200603	MMSCF	N/A	IA 74-76
EU 109, 110, 111	Alumni Hall	N/A	Three (3) 3.0 MMBtu/hr Natural Gas Boilers	Indirect Heat Exchanger	N/A	Lochnivar	FB3001	8/1/2024	10200603	MMSCF	N/A	EU 109-111

Section A.2: Operating and Fuel Information

Emission Unit #	If multipurpose unit, identify the percentage of use by purpose				Rated Capacity Heat Input *(MMBTU/hr)*	Rated Capacity Power Output		Describe Operating Scenario (only if this unit will be used in different configurations)	Classify Fuel as Primary or Secondary	Identify Fuel Type: Coal, Natural Gas, Wood, Biomass, Landfill/Digester Gas, Fuel Oil # (specify 1-6), or Other	Heat Content (HHV)		Maximum Operating Hours	Ash Content *(%)*	Sulfur Content *(%)*
	Space Heat	Process Heat	Power	Emergency			*(Specify units: hp, MW, or lb steam/hr)*					*(Specify units: Btu/lb, Btu/gal, or Btu/scf)*			
IA 74, 75, 76	100	0	0	0	0.5				Primary	Natural Gas	1020	Btu/scf	8760		1 (max)
EU 109, 110, 111	100	0	0	0	3.0				Primary	Natural Gas	1020	Btu/scf	8760		1 (max)

Section A.3: Notes, Comments, and Explanations

Division for Air Quality
300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007DD

Insignificant Activities

___ Section DD.1: Table of Insignificant Activities
___ Section DD.2: Signature Block
___ Section DD.3: Notes, Comments, and Explanations

Source Name: **Eastern Kentucky University**
KY EIS (AFS) #: **21- 151-00007**
Permit #: **F-20-006 R3**
Agency Interest (AI) ID: **2820**
Date: **9/23/2024**

Section DD.1: Table of Insignificant Activities

*Identify each activity with a unique Insignificant Activity number (IA #); for example: 1, 2, 3… etc.

Insignificant Activity #	Description of Activity including Rated Capacity	Serial Number or Other Unique Identifier	Applicable Regulation(s)	Calculated Emissions
IA 74, 75, 76 @ Keene Hall	Three (3) 0.5 MMBtu/hr Natural Gas Water Heaters	Lochnivar model SWA500N	401 KAR 52:030	See Spreadsheet attached to DEP 7007N

Insignificant Activity #	Description of Activity including Rated Capacity	Serial Number or Other Unique Identifier	Applicable Regulation(s)	Calculated Emissions

Section DD.2: Signature Block

I, THE UNDERSIGNED, HEREBY CERTIFY UNDER PENALTY OF LAW, THAT I AM A RESPONSIBLE OFFICIAL, AND THAT I HAVE PERSONALLY EXAMINED, AND AM FAMILIAR WITH, THE INFORMATION SUBMITTED IN THIS DOCUMENT AND ALL ITS ATTACHMENTS. BASED ON MY INQUIRY OF THOSE INDIVIDUALS WITH PRIMARY RESPONSIBILITY FOR OBTAINING THE INFORMATION, I CERTIFY THAT THE INFORMATION IS ON KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE OR INCOMPLETE INFORMATION, INCLUDING THE POSSIBILITY OF FINE OR IMPRISONMENT.

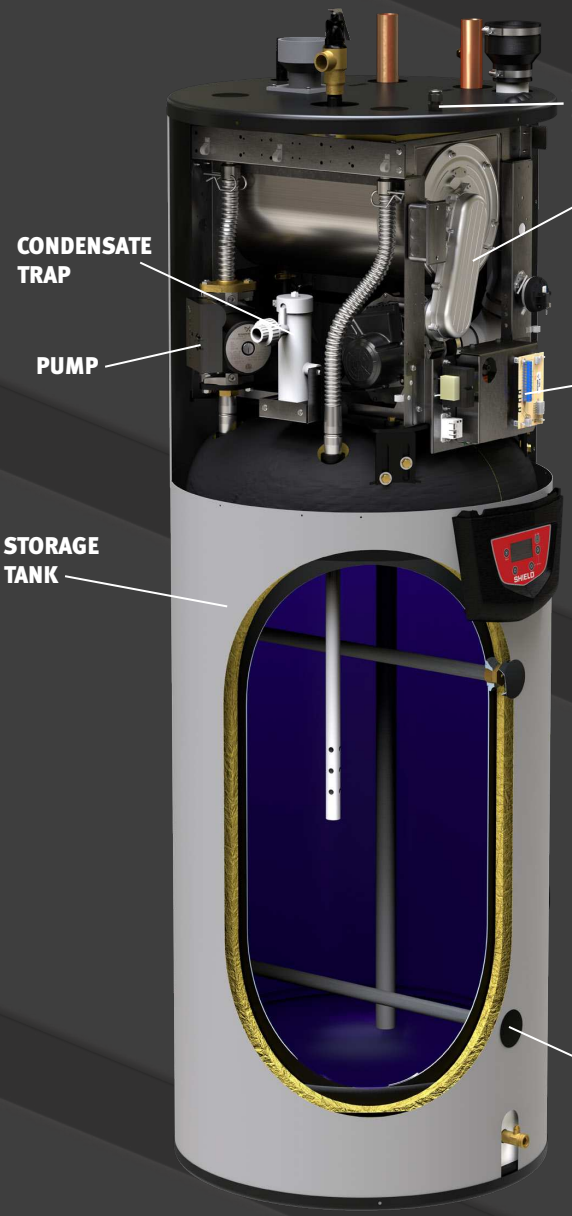
		9/25/2024
	Authorized Signature	**Date**
By:		
	Dekia Gaither	Director of EHS
	Type/Print Name of Siguatory	**Title of Siguatory**

SMART CONTROL™ CON·X·US® READY
REMOTE CONNECT

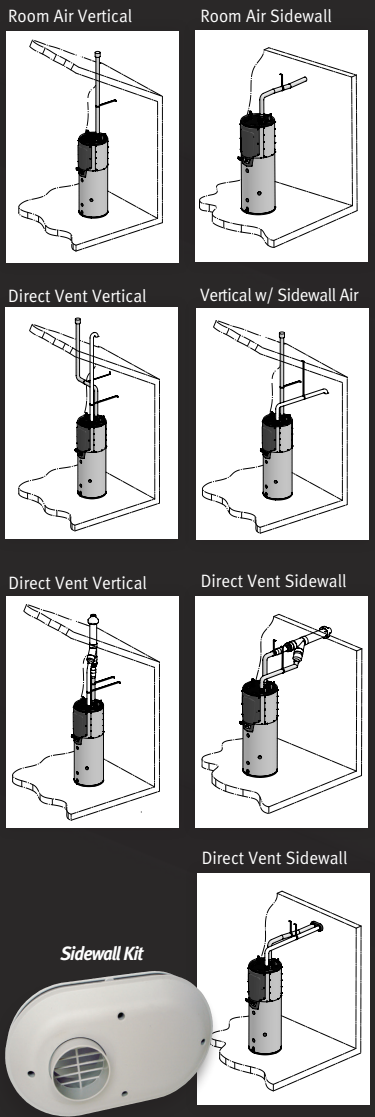
The SHIELD'S backlit display features the ultimate water heater control with easy to program Set-up Wizard which makes system setup, service and operation a breeze. The CON·X·US mobile communication platform allows SMART CONTROL to go where no other water heater has gone before.*

CON·X·US provides the ability to monitor and manage the SHIELD water heater without ever stepping into the mechanical room. CON·X·US will send alerts via text or e-mail with notification of changes in the system status. Once downloaded, the free CON·X·US mobile application allows for remote re-programming of key SHIELD functions using any internet-capable device.

* CON·X·US board sold separately. See back cover for a complete list of SMART CONTROL features.

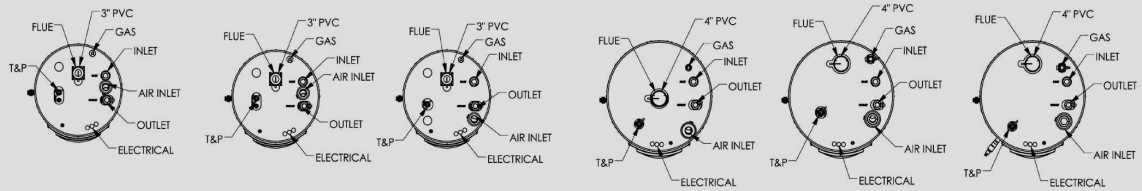


7 VENTING OPTIONS!

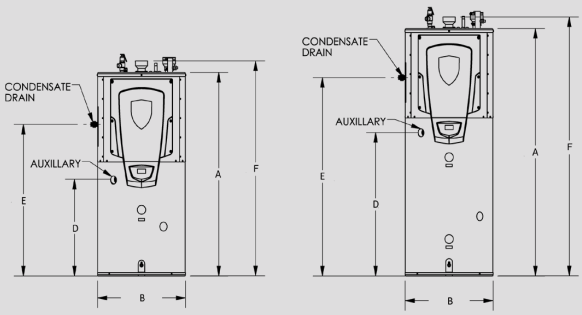


**Optional Sidewall Kit or Concentric Vent Kit Sold Separately*

SHIELD™ WATER HEATER DIMENSIONS AND SPECIFICATIONS



SWR125 SW(R,A)150 SW(R,A) 200 SW(R,A)285 SW(R,A)400 SWA500



SWR125 SW(R,A)150-200 SW(R,A)285-500

Model Number Guide

S	W	A	285	N
SHIELD	Water Heater	ASME Construction	285,000 Btu/hr Input	Natural Gas

***S**HIELD*
***W**ater Heater*
***A**SME*
***285**,000 Btu/hr Input*
***N**atural Gas*

SHIELD™ WATER HEATER						DIMENSIONS AND SPECIFICATIONS									
Model Number	Btu/hr Input	Capacity (Gal)	Thermal Efficiency	GPH @ 100° Rise	1st Hour	A	B	D	E	F	Gas Conn.	Water Conn.	Air Inlet	Vent Size	Ship Wt. (lbs.)
Regular Construction															
SWR125N	125,000	65	96%	145	197	62 1/2"	28"	29-1/2"	46 1/2"	66"	1/2"	1-1/2"	3"	3"	560
SWR150N	150,000	90	96%	175	247	76"	28"	44"	61"	79-1/2"	1/2"	1-1/2"	3"	3"	625
SWR200N	199,000	90	96%	232	304	76"	28"	44"	61"	79-1/2"	1/2"	1-1/2"	3"	3"	640
SWR285N	285,000	110	95%	328	416	77-1/2"	34"	30-1/2"	51-3/4"	79-1/2"	1/2"	1-1/2"	4"	4"	900
SWR400N	399,000	110	95%	459	547	77-1/2"	34"	30-1/2"	51-3/4"	79-1/2"	1"	1-1/2"	4"	4"	930
ASME Construction															
SWA150N	150,000	90	96%	175	247	76"	28"	44"	61"	79-1/2"	1/2"	1-1/2"	3"	3"	680
SWA200N	199,000	90	96%	232	304	76"	28"	44"	61"	79-1/2"	1/2"	1-1/2"	3"	3"	700
SWA285N	285,000	110	95%	328	416	77-1/2"	34"	30-1/2"	51-3/4"	79-1/2"	1/2"	1-1/2"	4"	4"	900
SWA400N	399,000	110	95%	459	547	77-1/2"	34"	30-1/2"	51-3/4"	79-1/2"	1"	1-1/2"	4"	4"	930
SUBMITTED SWA500N	500,000	110	96%	582	670	77-1/2"	34"	30-1/2"	51-3/4"	79-1/2"	1"	1-1/2"	4"	4"	960

Change "N" to "L" for LP gas. Field convertible to LP Gas *A = ASME Construction* *Electrical Requirements: 120V/1PH/60Hz* *All Information is subject to change.*

STANDARD FEATURES

- Up to 96% Thermal Efficiency
- Modulating Burner with 5:1 Turndown
- Operates at Temperatures up to 180˚F for Sanitizing Applications
- Stainless Steel Heat Exchanger
- Glass-Lined Steel Tank
- LP Conversion Kit
- Dual Magnesium Anode Rods
- 150 PSI Working Pressure
- ASME Construction (SWA150–500)
- ASME Temperature and Pressure Relief Valve
- Zero Clearances to Combustible Material
- Certified for Installation on Combustible Floors
- PVC, CPVC, Polypropylene and Stainless Steel Venting up to 150 Equivalent Feet
- Direct-Vent Sealed Combustion
- Rooftop and Sidewall Venting
- Advanced SMART CONTROL
  - LCD Display
  - Time Clock
  - Night Setback
  - Alarm Contacts
  - Runtime Contacts
  - Manual Reset High Limit
  - 3 Water Temperature Sensors
  - Flue Temperature Sensor
  - Contacts for Louvers
  - Adjustable Pump Delay
  - Security Protection
  - Enable/Disable Contacts
- Low-NOx Operation, meets SCAQMD Rule 1146.2
- Low Gas Pressure Operation
- Direct-Spark Ignition
- Brass Drain Valve
- 8-Foot Power Cord
- 3-Year Limited Warranty
- 1-Year Parts Warranty

OPTIONAL EQUIPMENT

- CON·X·US® Remote Connectivity
- Modbus Communication
- BACnet Communication
- Audible Alarm Kit
- Concentric Vent Kit
- Condensate Neutralization Kit
- Low Water Cutoff Kit
- Sidewall Vent Termination Kit

Lochinvar®
Lochinvar, LLC
300 Maddox Simpson Parkway
Lebanon, Tennessee 37090
P: 615.889.8900 / F: 615.547.1000
Lochinvar.com

SWH-08 (Replace SWH-07 10/20)
2500K - 1/2021 Printed in U.S.A.

CREST COMMERCIAL CONDENSING BOILER

Submittal Sheet

Lochinvar®
HIGH EFFICIENCY BOILERS & WATER HEATERS

MODELS FB 0751 - FB 6001 Series 1**

FBN-Sub-15

Job Name: EKU Alumni

Location:

Contractor: Lagco

Type Gas: Natural

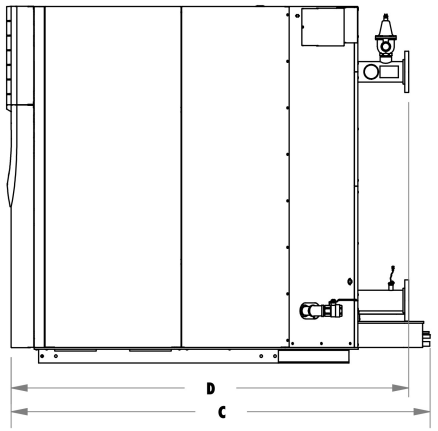
Engineer:

Model #: FBN3001

Agent/Wholesaler: Plumbers Supply Co

Equipment Tag(s):

SIDE



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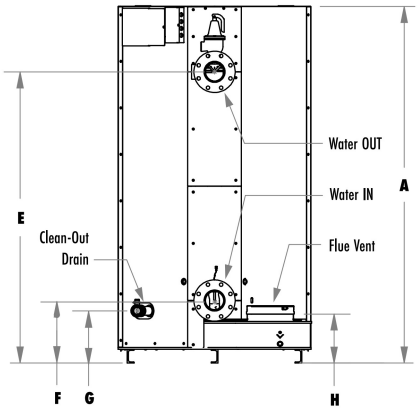

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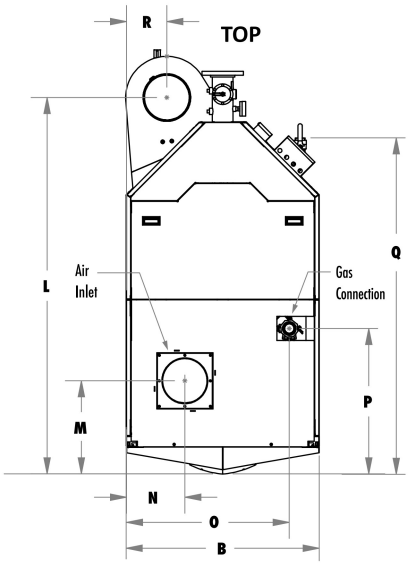

JOB NOTES:

INCLUDES ONE TRIP FOR FACTORY AUTHORIZED STARTUP AND ONE TRIP FOR OWNER TRAINING.

Notes:

- * *Insert "N" for natural gas and "L" for LP gas models.*
- *Indoor installation only.*
- *Low NOx Operation.*
- *Lochinvar should be consulted before selecting a boiler for installations having unusual piping and pickup requirements, such as intermittent system operation, extensive piping systems, etc.*
- *The ratings have been determined under the provisions governing forced draft burners.*
- *The Net AHRI water ratings shown are based on a piping and pickup allowance of 1.15.*

AHRI CERTIFIED

Model Number	Input MBH Min	Input MBH Max	Turndown	Gross Output MBH	Net AHRI Rating MBH	Combustion Efficiency	Thermal Efficiency	A	B	C	D	E	F	G	H	L	M	N	O	P	Q	R	Gas Conn.	Water Inlet/ Outlet	Air Intake	Vent Size	Oper. Weight (with water)	Ship. Weight (lbs.)
FB*0751	50	750	15:1	722	628	96.4%	96.2%	78"	30"	55-1/2"	57-5/8"	66-1/8"	11-7/8"	11-3/8"	11-1/4"	51"	13"	8-3/4"	26-3/4"	23-3/4"	49-1/2"	7-3/8"	1-1/4"	3"	6"	6"	1,768	1,560
FB*1001	50	999	20:1	961	836	96.4%	96.2%	78"	30"	56-1/2"	57-5/8"	66-1/8"	11-7/8"	11-3/8"	11-1/4"	51"	13"	8-3/4"	26-3/4"	23-1/8"	49-1/2"	6-1/2"	1-1/4"	3"	6"	6"	1,838	1,596
FB*1251	62.5	1,250	20:1	1,203	1,046	96.4%	96.2%	78"	30"	56-1/2"	57-3/4"	66-1/8"	11-7/8"	11-3/8"	11-1/4"	51-3/8"	13"	8-3/4"	26- 3/4"	21-5/8"	49-1/2"	6-1/2"	1-1/2"	3"	6"	8"	1,975	1,648
FB*1501	60	1,500	25:1	1,443	1,255	96.4%	96.2%	78"	30"	67-3/4"	68"	65-3/8"	12-3/8"	11-3/8"	11-1/4"	62-3/8"	15-7/8"	9"	26-7/8"	27-7/8"	59-1/4"	5-1/8"	1-1/2"	4"	8"	8"	2,307	1,961
FB*1751	70	1,750	25:1	1,684	1,464	96.4%	96.2%	78"	30"	66-1/4"	68"	65-3/8"	12-3/8"	11-3/8"	11-1/4"	61-1/2"	15-7/8"	9"	27"	27-1/8"	58-3/4"	5-1/8"	1-1/2"	4"	8"	8"	2,458	2,017
FB*2001	80	1,999	25:1	1,923	1,672	96.4%	96.2%	78"	30"	66-1/2"	68"	65-3/8"	12-3/8"	11-3/8"	11-1/4"	61-1/2"	15-7/8"	9"	27"	26-3/4"	58-3/4"	5-1/8"	1-1/2"	4"	8"	8"	2,570	2,087
FB*2501	125	2,500	20:1	2,400	2,087	96.1%	96.0%	77-3/4"	35"	83-3/4"	83-3/4"	63-3/4"	13-1/2"	11-1/4"	10-1/2"	76-1/4"	19-3/4"	9-1/4"	28-3/4"	32"	71"	7-1/4"	2"	4"	8"	9"	3,600	2,577
FB*3001	150	3,000	20:1	2,883	2,507	96.1%	96.0%	77-3/4"	35"	83-3/4"	83-3/4"	63-3/4"	13-1/2"	11-1/4"	10-1/2"	76-1/4"	19-3/4"	9-1/4"	28-3/4"	32"	71"	7-1/4"	2"	4"	10"	10"	3,900	2,881
FB*3501	175	3,500	20:1	3,364	2,925	96.1%	96.0%	77-3/4"	42"	91-1/2"	86-3/4"	63-1/2"	13-1/4"	11-1/2"	10-3/4"	82"	20-1/4"	12-3/4"	35-1/2"	31-3/4"	73-1/4"	8-3/4"	2"	4"	10"	10"	4,600	3,218
FB*4001	333.3	3,999	12:1	3,843	3,342	96.1%	96.0%	77-3/4"	45-1/2"	103-1/2"	99"	63-1/2"	13-3/4"	11-1/2"	10-3/4"	94"	24-3/4"	13-1/2"	39-1/2"	42-1/4"	85-1/4"	10-1/2"	2-1/2"	4"	12"	12"	5,200	3,805
FB*5001	499.9	4,999	10:1	4,804	4,177	96.1%	96.0%	77-3/4"	46-1/2"	102-1/4"	99-1/2"	63-1/2"	15"	11-1/2"	10-3/4"	92-1/2"	22"	14"	39-3/4"	39-1/2"	84"	9"	2-1/2"	6"	14"	14"	5,900	4,101
FB*6001	600	6,000	10:1	5,766	5,014	96.1%	96.0%	77-3/4"	50"	102-3/4"	99-3/4"	63-1/4"	14-3/4"	11-1/2"	10-3/4"	93-1/4"	20"	15-3/4"	43-1/2"	36-1/2"	83-3/4"	9-1/4"	3"	6"	14"	14"	6,900	4,711

Information subject to change without notice. Dimensions shown are approximate and should not be used for construction purposes.

EU 109-111

Lochinvar
HIGH EFFICIENCY BOILERS & WATER HEATERS

CREST BOILER PRODUCT SUMMARY
(FB) 2,500,000 - 6,000,000 BTU/HR

	FB-2501	FB-3001	FB-3501	FB-4001	FB-5001	FB-6001
WATER						
GALLON CAPACITY	157	156	202	201	254	304
HEATING SURFACE (SQ. FT.)	241	265	334	352	452	563
INLET WATER CONNECTION	4" Flanged	4" Flanged	4" Flanged	4" Flanged	6" Flanged	6" Flanged
OUTLET WATER CONNECTION	4" Flanged	4" Flanged	4" Flanged	4" Flanged	6" Flanged	6" Flanged
DRAIN	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
MAXIMUM FLOW RATE (GPM)	350	350	350	350	600	600
ABSOLUTE MINIMUM FLOW RATE (GPM)	25	25	45	45	50	60
20°F ΔT WATER FLOW (GPM)	240	288	336	350†	480	576
HEAD LOSS (FT. OF HD.)	8.4	8.0	9.9	10.9	13.9	17.2
40°F ΔT WATER FLOW (GPM)	120	144	168	192	240	288
HEAD LOSS (FT. OF HD.)	5.3	4.0	5.0	5.9	7.6	9.4
MAX. WORKING PRESSURE (PSI)	160	160	160	160	160	160
# OF RELIEF VALVES	1	1	1	1	1	1
RELIEF VALVE SIZE	1 1/2	1 1/2	2	2	2	2 1/2
RELIEF VALVE RATING (MBH)	3,075	3,075	4,237	4,237	5,575	7,672
RELIEF VALVE PRESSURE RATING (PSI)	50	50	50	50	50	50
GAS						
BTU/HR INPUT	2,500,000	3,000,000	3,500,000	3,999,000	4,999,000	6,000,000
BTU/HR OUTPUT (HIGH FIRE)	2,400,000	2,883,000	3,364,000	3,843,000	4,804,000	5,766,000
BTU/HR OUTPUT (LOW FIRE)	120,000	144,150	168,200	320,250	480,400	576,600
HORSE POWER (INPUT)	75	90	105	119	149	179
INLET CONNECTION	2	2	2	2 1/2	2 1/2	3
MAX. INLET PRESSURE, NAT	14" w.c.	14" w.c.	14" w.c.	14" w.c.	14" w.c.	14" w.c.
MIN. INLET PRESSURE, NAT	4" w.c.	4" w.c.	4" w.c.	4" w.c.	4" w.c.	4" w.c.
MAX. INLET PRESSURE, LP	14" w.c.	14" w.c.	14" w.c.	14" w.c.	14" w.c.	14" w.c.
MIN. INLET PRESSURE, LP	8" w.c.	8" w.c.	8" w.c.	8" w.c.	8" w.c.	8" w.c.
ELECTRICAL *						
VOLTAGE/HEATER (VAC)	208V/3PH/60Hz	208V/3PH/60Hz	208V/3PH/60Hz	480V/3PH/60Hz	480V/3PH/60Hz	480V/3PH/60Hz
VOLTAGE/CONTROL (VAC)	24	24	24	24	24	24
TOTAL AMPS (FLA)	4.5	6.5	6.5	6.0	5.0	7.0
MINIMUM CIRCUIT AMPS (MCA)	5.6	8.1	8.1	7.5	6.3	8.8
# OF ELECTRICAL CONNECTIONS	1	1	1	1	1	1
DIMENSIONS						
HEIGHT	77 3/4	77 3/4	77 3/4	77 3/4	77 3/4	77 3/4
WIDTH	35	35	42	45.5	46.5	50
DEPTH	83.75	83.75	91.5	103.5	102.25	102.75
SHIPPING WEIGHT (lbs.)	2,577	2,881	3,218	3,805	4,101	4,711
OPERATING WEIGHT (lbs.)	3,600	3,900	4,600	5,200	5,900	6,900
SERVICE CLEARANCES (RECOMMENDED)						
FRONT	30	30	30	30	30	30
REAR	24	24	24	24	24	24
RIGHT SIDE	24	24	24	24	24	24
LEFT SIDE	24	24	24	24	24	24
TOP	24	24	24	24	24	24
DIRECT VENTING						
VENT SIZE	9	10	10	12	14	14
AIR INLET SIZE	8	10	10	12	14	14
VENT CATEGORY	II or IV	II or IV	II or IV	II or IV	II or IV	II or IV
VENT MATERIAL	SS, CPVC, PVC, Polypro	SS, CPVC, PVC, Polypro	SS, CPVC, PVC, Polypro	SS, CPVC, PVC, Polypro	Stainless Steel	Stainless Steel

* Electrical - For alternate voltages and amp draws, please consult the factory or the installation and operation manual.

† Data based on 22°F delta T

Unless otherwise specified dimensions are in inches.

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www.Lochinvar.com

FBN-PS-17 (Replaces FBN-PS-16) **07/20-Printed in U.S.A.**

Division for Air Quality

300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007EE

Internal Combustion Engines

___ Section EE.1: General Information
___ Section EE.2: Operating Information
___ Section EE.3: Design Information
___ Section EE.4: Fuel Information
___ Section EE.5: Emission Factor Information
___ Section EE.6: Notes, Comments, and Explanations

Additional Documentation

___ Complete DEP7007AI, DEP7007N, DEP7007V, and DEP7007GG

___ Attach EPA certification of the engine

Source Name: **Eastern Kentucky University**
KY EIS (AFS) #: **21- 151-00007**
Permit #: **F-20-006-R3**
Agency Interest (AI) ID: **2820**
Date: **9/23/2024**

Section EE.1: General Information

Emission Unit #	Emission Unit Name	Control Device ID	Stack ID	Manufacturer	Model Number	Model Year	Date of Manufacture	Proposed/Actual Date of Construction Commencement *(MM/YYYY)*	Date Reconstructed/ Modified	List Applicable Regulations
EG 62	Keen Johnson	N/A	EG 62	Cummins	C25 N6	2023	03/2023	08/2024	N/A	401 KAR 52:030

Section EE.2: Operating Information

Emission Unit #	**Engine Purpose** (Identify if Non-Emergency, Emergency,Fire/Water Pump, Black-start engine for combustion turbine, Engine Testing)	**Hours Operated**	**Is this engine a rental?** *(Yes/No)*	**Rental Time Period** *(hrs)*	**Alternate Operating Scenarios** (Describe any operating scenarios in which the engine may be used in a different configuration)
EG 62	Emergency	<100 hr/yr non-emergency	No	N/A	Generator is for emergency use only.

Section EE.3: Design Information

Emission Unit #	Engine Type (Identify all that apply: Commercial, Institutional, Stationary, Non-Road)	Ignition Type (Identify if either Compression or Spark Ignition)	Engine Family (Identify all that apply: 2-stroke, 4-stroke, Rich Burn, Lean Burn)	Maximum Engine Power *(bhp)*	Maximum Engine Speed *(rpm)*	Total Displacement *(L)*	Number of Cylinders
EG 62	Stationary	Spark Ignition	4-stroke, assume rich burn	40	1800	2.4	4

Section EE.4: Fuel Information

Emission Unit #	Identify if Primary, Secondary, or Tertiary Fuel	Fuel Type (Identify if Diesel, Gasoline, Natural Gas, Liquefied Petroleum Gas (LPG), Landfill/Digester Gas, or Other)	Fuel Grade	Percent Time Used *(%)*	Maximum Fuel Consumption	Heat Content	Sulfur Content *(%)*	SCC Code	SCC Units
EG 62	Primary	Natural Gas	N/A	1.14	309.5 cfh	1020 Btu/cfh	0.0025%	20100202	MMSCF

Section EE.5: Emission Factor Information

Emission factors expressed here are based on the potential to emit.

Emission Unit #	Fuel	Pollutant	Emission Factor	Emission Factor Units	Source of Emission Factor
EG 62	Natural Gas	See Spreadsheet Attached to DEP 7007N	See Spreadsheet Attached to DEP 7007N	See Spreadsheet Attached to DEP 7007N	See Spreadsheet Attached to DEP 7007N

Section EE.6: Notes, Comments, and Explanations

Generator set data sheet

Model: C25 N6
kW rating: 25.0 natural gas Standby
25.0 propane Standby
Frequency: 60 Hz
Fuel type: Natural gas/propane
Emissions level: EPA emissions

Fuel consumption

	Natural gas				Propane			
	Standby				Standby			
	kW (kVA)				kW (kVA)			
Ratings	25.0 (31.3)				25.0 (31.3)			
Load	1/4	1/2	3/4	Full	1/4	1/2	3/4	Full
scfh	123.8	185.7	247.6	309.5	51.6	75.6	99.6	125.4
m^3/hr	3.51	5.26	7.01	8.77	1.46	2.14	2.82	3.55

Engine

	Natural gas	Propane
	Standby rating	Standby rating
Engine model	QSJ2.4	
Configuration	Cast iron, in-line 4 cylinder	
Aspiration	Naturally aspirated	
Gross engine power output, kW_m (bhp)	30 (40)	32 (43.5)
Bore, mm (in.)	86.5 (3.41)	
Stroke, mm (in.)	100.0 (3.94)	
Rated speed, rpm	1800	
Compression ratio	9.5:1	
Lube oil capacity, L (qt)	4 (4.54)	
Overspeed limit, rpm	2250	

Fuel supply pressure

Minimum operating pressure, kPa (in H_2O)	1.5 (6.0)
Maximum operating pressure, kPa (in H_2O)	3.2 (13.0)

Air	Natural gas Standby rating	Propane Standby rating
Combustion air, m^3/min (scfm)	1.5 (51.8)	1.3 (46.5)
Maximum air cleaner restriction, kPa (in H_2O)	1.24 (5.0)	
Alternator cooling air, m^3/min (scfm)	N/A	

Exhaust

Exhaust flow at rated load, m^3/min (cfm)	5.3 (188.1)	4.6 (165.3)
Exhaust temperature, °C (°F)	618 (1145)	628 (1162)
Exhaust back pressure (maximum allowable at engine), kPa (in H_2O)	5.0 (20)	5.0 (20)
Exhaust back pressure (actual with factory fitted muffler), kPa (in H_2O)	1.75 (7)	

Standard set-mounted radiator cooling

Ambient design, °C (°F)	50 (122)
Fan load, kW (HP)	0.74 (1.0)
Coolant capacity (with radiator), L (US gal)	12 (3.1)
Cooling system air flow, m^3/min (scfm)	60.2 (2150)
Maximum cooling air flow static restriction, kPa (in H_2O)	0.12 (0.5)

Weights[2]

Unit dry weight kgs (lbs)	483 (1067)
Unit wet weight kgs (lbs)	500 (1103)

Notes:
[1]For non-standard remote installations contact your local Cummins representative.
[2]Weights represent a set with 1-phase with sound level 1 enclosure.

Product features

Engine

- Natural gas/propane 1800 rpm engine
- Engine air cleaner – normal duty
- Electronic governor, isochronous
- Engine starter, 12 VDC motor
- Shutdown – low oil pressure
- Extension – oil drain
- Engine oil – included

Fuel system

- Single fuel – natural gas or propane vapor, field selectable

Alternator

- 60 Hz, 1 phase, 4 lead, or 3 phase, 12 lead, 120° C temperature rise at 40° C ambient
- Exciter/voltage regulator – torque match

Control

- PowerCommand 1.1
- Display language – English
- Control mounting, right facing

Electrical

- Single circuit breaker, UL certified, right-side mounted
- Battery charging alternator, normal duty
- Battery charger – 6 Amp, regulated

Cooling

- Generator set cooling capability – 50° C
- Shutdown – low coolant level
- Engine coolant – 50/50 mixture
- Extension – coolant drain

Enclosure

- Aluminum enclosure Sound Level 1 with muffler installed, sandstone color
- Wind rating – 180 mph

Code compliance

- UL 2200
- EPA emissions, emergency, stationary, 40CFR60
- IBC Seismic
- NFPA 110 capable

Generator set application

- Coolant heater
- Crank case vent heater
- Large battery rack
- Flexible fuel line
- Literature (English) – operator's manual, installation quick guide and manual, service manual

Packaging

- Shipping pallet, poly bag

Generator set performance

Governor regulation class: ISO 8528 Part 1 Class G3
Voltage regulation, no load to full load: ±1.0%
Random voltage variation: ±1.0%
Frequency regulation: Isochronous
Random frequency variation: ± 0.25% @ 60 Hz
Radio frequency emissions compliance: FCC code Title 47 part 15 Class B

Engine Specifications

Design: Naturally Aspirated
Bore: 86.5 mm (3.4 in)
Stroke: 100.0 mm (3.94 in)
Displacement: 2.4 liters (143.5 in3)
Cylinder block: Cast iron, in-line 4 cylinder
Battery capacity: 550 Amps at ambient temperature of 0° F to 32° F (-18° C to 0° C)
Battery charging alternator: 50 Amps
Starting voltage: 12-Volt, negative ground
Lube oil filter type(s): Spin -on with relief valve
Standard cooling system: 50° C (122° F) ambient cooling system
Rated speed: 1800 rpm

Fuel supply pressure

Minimum: kPa (in H2O)**:** 1.5 (6.0)
Maximum: kPa (in H2O) 3.5 (14.0)

Warranty

Base warranty – 2-year standby
Extended warranties available

Typical fuel consumption

Fuel consumption – natural gas

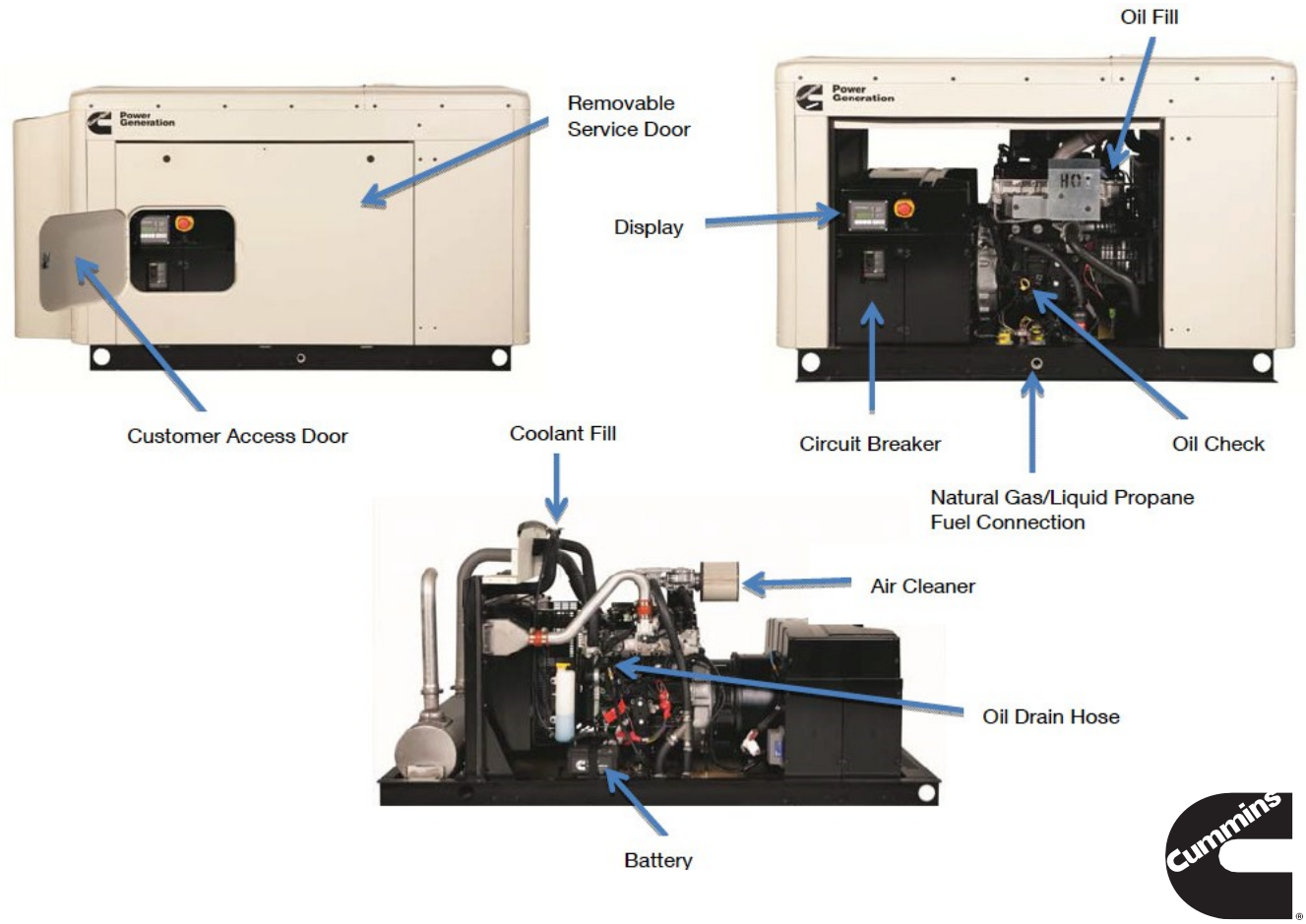
Load:	1/4	1/2	3/4	Full
ft^3/hr:	123.8	185.7	247.6	309.5
m^3/hr:	3.5	5.2	6.9	8.7

Fuel consumption – LP vapor

Load:	1/4	1/2	3/4	Full
ft^3/hr:	51.5	75.6	99.6	125.4
m^3/hr:	1.4	2.1	2.8	3.5
gal/hr	1.4	2.1	2.8	3.5

Conversion factor:
8.58 ft^3 = 1 lb.
0.535m^3 = 1 kg
36.39 ft^3 = 1 gal

Easy service and installation



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2023 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: **Cummins Inc.**
(U.S. Manufacturer or Importer)

Certificate Number: PCEXB02.4AAB-003

Effective Date: 07/20/2022

Expiration Date: 12/31/2023

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 07/20/2022

Revision Date: N/A

Manufacturer: Cummins Inc.
Engine Family: PCEXB02.4AAB
Mobile/Stationary Certification Type: Stationary
Fuel : Natural Gas (CNG/LNG)
LPG/Propane
Emission Standards :
Part 90 Phase 1
NMHC + NOx (g/kW-hr) : 13.4
CO (g/kW-hr) : 519.0
HC + NOx (g/kW-hr) : 13.4
Emergency Use Only : Y

Pursuant to Section 213 of the Clean Air Act (42 U.S.C. section 7547) and 40 CFR Part 60, 1065, 1068, and 60 (stationary only and combined stationary and mobile) and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following nonroad engines, by engine family, more fully described in the documentation required by 40 CFR Part 60 and produced in the stated model year.

This certificate of conformity covers only those new nonroad spark-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60. This certificate of conformity does not cover nonroad engines imported prior to the effective date of the certificate.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068.20 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 60. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Part 60.

This certificate does not cover large nonroad engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

Division for Air Quality

300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007N

Source Emissions Profile

__ Section N.1: Emission Summary
__ Section N.2: Stack Information
__ Section N.3: Fugitive Information
__ Section N.4: Notes, Comments, and Explanations

Additional Documentation

___ Complete DEP7007AI

Source Name: Eastern Kentucky University
KY EIS (AFS) #: 21- 151-00007
Permit #: F-20-006 R3
Agency Interest (AI) ID: 2820
Date: 8/23/2024

N.1: Emission Summary

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity *(SCC Units/hour)*	Pollutant	Uncontrolled Emission Factor *(lb/SCC Units)*	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency *(%)*	Control Efficiency *(%)*	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential *(lb/hr)*	Controlled Potential *(lb/hr)*	Uncontrolled Potential *(tons/yr)*	Controlled Potential *(tons/yr)*
IA 74, 75, 76	Keene Hall	N/A	(3) 0.5 NG Water Heaters	N/A	N/A	IA 74-76	0.0005 MMSCF/hr	See attached	See attached	AP-42 Table 1.4-1, 2, 3, 4	100.00%	0.00%	See attached	See attached	See attached	See attached
EU 109, 110, 111	Alumni Hall	N/A	(3) 3.0 NG Boilers	N/A	N/A	EU 109-111	0.0030 MMSCF/hr	See attached	See attached	AP-42 Table 1.4-1, 2, 3, 4	100.00%	0.00%	See attached	See attached	See attached	See attached
EG 62	Keen Johnson	N/A	25 kW NG EG	N/A	N/A	EG 62	0.00031 MMSCF/hr	See attached	See attached	AP-42 Table 3.2-3	100.00%	0.00%	See attached	See attached	See attached	See attached

Section N.2: Stack Information

UTM Zone:

Stack ID	Identify all Emission Units (with Process ID) and Control Devices that Feed to Stack	Stack Physical Data			Stack UTM Coordinates		Stack Gas Stream Data		
		Equivalent Diameter *(ft)*	Height *(ft)*	Base Elevation *(ft)*	Northing *(m)*	Easting *(m)*	Flowrate *(acfm)*	Temperature *(° F)*	Exit Velocity *(ft/sec)*
IA 74, 75, 76	Keene Hall	0.33	34	989	4179836.37	737546.36	<50	<250	
EU 109, 110, 111	Alumni Hall	0.83	42	1014	4180126.52	737801.92	<50	<250	
EG 62	Keen Johnson	0.5	6	1004	4180442.13	737896.18	188.1	1145	

Section N.3: Fugitive Information

UTM Zone:

Emission Unit #	Emission Unit Name	Process ID	Area Physical Data		Area UTM Coordinates		Area Release Data	
			Length of the X Side *(ft)*	Length of the Y Side *(ft)*	Northing *(m)*	Easting *(m)*	Release Temperature *(°F)*	Release Height *(ft)*

Section N.4: Notes, Comments, and Explanations

Eastern Kentucky University AI 2820
Attachment to DEP 7007N
Emission Calculations and Emission Factors

Insignificant Activities 74, 75, 76 - Keene Hall

Total Power Output:	0.500	MMBtu/hr each	**Max Usage:**	8,760	hr/yr
	1.5	MMBtu/hr Total	**Actual Usage*:**	8,760	hr/yr
Heating Value:	1,020	Btu/scf			

Heater Emission Factors				
Pollutant	**Emission Factor**		**Data Source**	
CO	84	lb/10^6scf	AP 42, Table 1.4-1	
NO_x	50	lb/10^6scf	AP 42, Table 1.4-1	LO NOX
CO_2	120000	lb/10^6scf	AP 42, Table 1.4-2	
Lead	0.0005	lb/10^6scf	AP 42, Table 1.4-2	
N_2O	2.20	lb/10^6scf	AP 42, Table 1.4-2	
PM	7.6	lb/10^6scf	AP 42, Table 1.4-2	
PM_{10}	7.6	lb/10^6scf	AP 42, Table 1.4-2	
$PM_{2.5}$	7.6	lb/10^6scf	AP 42, Table 1.4-2	
SO_2	0.6	lb/10^6scf	AP 42, Table 1.4-2	
TOC	11.0	lb/10^6scf	AP 42, Table 1.4-2	
Methane	2.3	lb/10^6scf	AP 42, Table 1.4-2	
VOC	5.5	lb/10^6scf	AP 42, Table 1.4-2	
Total HAP	1.89	lb/10^6scf	AP 42, Table 1.4-3 & 4	
Acenaphthene	1.80E-06	lb/10^6scf	AP 42, Table 1.4-3	
Acenaphthylene	1.80E-06	lb/10^6scf	AP 42, Table 1.4-3	
Anthracene	2.40E-06	lb/10^6scf	AP 42, Table 1.4-3	
Arsenic	2.00E-04	lb/10^6scf	AP 42, Table 1.4-4	
Benz(a)anthracene	1.80E-06	lb/10^6scf	AP 42, Table 1.4-3	
Benzene	2.10E-03	lb/10^6scf	AP 42, Table 1.4-3	
Benzo(a)pyrene	1.20E-06	lb/10^6scf	AP 42, Table 1.4-3	
Benzo(b)fluoranthene	1.80E-06	lb/10^6scf	AP 42, Table 1.4-3	
Benzo(g,h,i)perylene	1.20E-06	lb/10^6scf	AP 42, Table 1.4-3	
Benzo(k)fluoranthene	1.80E-06	lb/10^6scf	AP 42, Table 1.4-3	
Beryllium	1.20E-05	lb/10^6scf	AP 42, Table 1.4-4	
Cadmium	1.10E-03	lb/10^6scf	AP 42, Table 1.4-4	
Chromium	1.40E-03	lb/10^6scf	AP 42, Table 1.4-4	
Chrysene	1.80E-06	lb/10^6scf	AP 42, Table 1.4-3	
Cobalt	8.40E-05	lb/10^6scf	AP 42, Table 1.4-4	
Dibenzo(a,h)anthracen	1.20E-06	lb/10^6scf	AP 42, Table 1.4-3	
Dichlorobenzene	1.20E-03	lb/10^6scf	AP 42, Table 1.4-3	
7,12-Dimethylbenz(a)a	1.60E-05	lb/10^6scf	AP 42, Table 1.4-3	
Fluoranthene	3.00E-06	lb/10^6scf	AP 42, Table 1.4-3	
Fluorene	2.80E-06	lb/10^6scf	AP 42, Table 1.4-3	
Formaldehyde	7.50E-02	lb/10^6scf	AP 42, Table 1.4-3	
Hexane	1.80E+00	lb/10^6scf	AP 42, Table 1.4-3	
Indeno(1,2,3-cd)pyrene	1.80E-06	lb/10^6scf	AP 42, Table 1.4-3	
Manganese	3.80E-04	lb/10^6scf	AP 42, Table 1.4-4	
Mercury	2.60E-04	lb/10^6scf	AP 42, Table 1.4-4	
2-Methylnaphthalene	2.40E-05	lb/10^6scf	AP 42, Table 1.4-3	
3-Methylchloranthrene	1.80E-06	lb/10^6scf	AP 42, Table 1.4-3	
Naphthalene	6.10E-04	lb/10^6scf	AP 42, Table 1.4-3	
Nickel	2.10E-03	lb/10^6scf	AP 42, Table 1.4-4	
Phenanathrene	1.70E-05	lb/10^6scf	AP 42, Table 1.4-3	
Pyrene	5.00E-06	lb/10^6scf	AP 42, Table 1.4-3	
Selenium	2.40E-05	lb/10^6scf	AP 42, Table 1.4-4	
Toluene	3.40E-03	lb/10^6scf	AP 42, Table 1.4-3	

Combined Annual Emissions Calculations - (IA Heat Exchangers - 3 units combined)					
Pollutant	**Uncontrolled (8,760 hr/yr)**		**Controlled*[1] (8,760 hr/yr)**		**Emissions**
	lb/yr	tons/yr	lb/yr	ton/yr	**lbs/hr**
CO	1,082.12	0.54	1,082.12	0.54	**0.124**
NO_x	644.12	0.32	644.12	0.32	**0.074**
CO_2	1,545,882.35	772.94	1,545,882.35	772.94	**176.471**
Lead	6.44E-03	0.00	0.01	0.00	**0.000**
N_2O	28.34	0.01	28.34	0.01	**0.003**
PM	97.91	0.05	97.91	0.05	**0.011**
PM_{10}	97.91	0.05	97.91	0.05	**0.011**
$PM_{2.5}$	97.91	0.05	97.91	0.05	**0.011**
SO_2	7.73	0.00	7.73	0.00	**0.001**
TOC	141.71	0.07	141.71	0.07	**0.016**
Methane	29.63	0.01	29.63	0.01	**0.003**
VOC	70.85	0.04	70.85	0.04	**0.008**
Total HAP	24.32	0.01	24.32	0.01	**0.003**

Note 1 - No controls on boiler emissions other than low NOX burners

Eastern Kentucky University AI 2820
Attachment to DEP 7007N
Emission Calculations and Emission Factors

Emission Units 109, 110, 111 - Alumni Hall

Total Power Output:	3.000	MMBtu/hr each	**Max Usage:**	8,760	hr/yr
	9	MMBtu/hr Total	**Actual Usage*:**	8,760	hr/yr
Heating Value:	1,020	Btu/scf			

Heater Emission Factors				
Pollutant	**Emission Factor**		**Data Source**	
CO	84	lb/10^6scf	AP 42, Table 1.4-1	
NO_x	50	lb/10^6scf	AP 42, Table 1.4-1	LO NOX
CO_2	120000	lb/10^6scf	AP 42, Table 1.4-2	
Lead	0.0005	lb/10^6scf	AP 42, Table 1.4-2	
N_2O	2.20	lb/10^6scf	AP 42, Table 1.4-2	
PM	7.6	lb/10^6scf	AP 42, Table 1.4-2	
PM_{10}	7.6	lb/10^6scf	AP 42, Table 1.4-2	
$PM_{2.5}$	7.6	lb/10^6scf	AP 42, Table 1.4-2	
SO_2	0.6	lb/10^6scf	AP 42, Table 1.4-2	
TOC	11.0	lb/10^6scf	AP 42, Table 1.4-2	
Methane	2.3	lb/10^6scf	AP 42, Table 1.4-2	
VOC	5.5	lb/10^6scf	AP 42, Table 1.4-2	
Total HAP	1.89	lb/10^6scf	AP 42, Table 1.4-3 & 4	
Acenaphthene	1.80E-06	lb/10^6scf	AP 42, Table 1.4-3	
Acenaphthylene	1.80E-06	lb/10^6scf	AP 42, Table 1.4-3	
Anthracene	2.40E-06	lb/10^6scf	AP 42, Table 1.4-3	
Arsenic	2.00E-04	lb/10^6scf	AP 42, Table 1.4-4	
Benz(a)anthracene	1.80E-06	lb/10^6scf	AP 42, Table 1.4-3	
Benzene	2.10E-03	lb/10^6scf	AP 42, Table 1.4-3	
Benzo(a)pyrene	1.20E-06	lb/10^6scf	AP 42, Table 1.4-3	
Benzo(b)fluoranthene	1.80E-06	lb/10^6scf	AP 42, Table 1.4-3	
Benzo(g,h,i)perylene	1.20E-06	lb/10^6scf	AP 42, Table 1.4-3	
Benzo(k)fluoranthene	1.80E-06	lb/10^6scf	AP 42, Table 1.4-3	
Beryllium	1.20E-05	lb/10^6scf	AP 42, Table 1.4-4	
Cadmium	1.10E-03	lb/10^6scf	AP 42, Table 1.4-4	
Chromium	1.40E-03	lb/10^6scf	AP 42, Table 1.4-4	
Chrysene	1.80E-06	lb/10^6scf	AP 42, Table 1.4-3	
Cobalt	8.40E-05	lb/10^6scf	AP 42, Table 1.4-4	
Dibenzo(a,h)anthracen	1.20E-06	lb/10^6scf	AP 42, Table 1.4-3	
Dichlorobenzene	1.20E-03	lb/10^6scf	AP 42, Table 1.4-3	
7,12-Dimethylbenz(a)a	1.60E-05	lb/10^6scf	AP 42, Table 1.4-3	
Fluoranthene	3.00E-06	lb/10^6scf	AP 42, Table 1.4-3	
Fluorene	2.80E-06	lb/10^6scf	AP 42, Table 1.4-3	
Formaldehyde	7.50E-02	lb/10^6scf	AP 42, Table 1.4-3	
Hexane	1.80E+00	lb/10^6scf	AP 42, Table 1.4-3	
Indeno(1,2,3-cd)pyrene	1.80E-06	lb/10^6scf	AP 42, Table 1.4-3	
Manganese	3.80E-04	lb/10^6scf	AP 42, Table 1.4-4	
Mercury	2.60E-04	lb/10^6scf	AP 42, Table 1.4-4	
2-Methylnaphthalene	2.40E-05	lb/10^6scf	AP 42, Table 1.4-3	
3-Methylchloranthrene	1.80E-06	lb/10^6scf	AP 42, Table 1.4-3	
Naphthalene	6.10E-04	lb/10^6scf	AP 42, Table 1.4-3	
Nickel	2.10E-03	lb/10^6scf	AP 42, Table 1.4-4	
Phenanathrene	1.70E-05	lb/10^6scf	AP 42, Table 1.4-3	
Pyrene	5.00E-06	lb/10^6scf	AP 42, Table 1.4-3	
Selenium	2.40E-05	lb/10^6scf	AP 42, Table 1.4-4	
Toluene	3.40E-03	lb/10^6scf	AP 42, Table 1.4-3	

Combined Annual Emissions Calculations - (NG Heat Exchangers - 3 units combined)					
Pollutant	**Uncontrolled (8,760 hr/yr)**		**Controlled*[1] (8,760 hr/yr)**		**Emissions**
	lb/yr	tons/yr	lb/yr	ton/yr	**lbs/hr**
CO	6,492.71	3.25	6,492.71	3.25	**0.741**
NO_x	3,864.71	1.93	3,864.71	1.93	**0.441**
CO_2	9,275,294.12	4637.65	9,275,294.12	4637.65	**1058.824**
Lead	3.86E-02	0.00	0.04	0.00	**0.000**
N_2O	170.05	0.09	170.05	0.09	**0.019**
PM	587.44	0.29	587.44	0.29	**0.067**
PM_{10}	587.44	0.29	587.44	0.29	**0.067**
$PM_{2.5}$	587.44	0.29	587.44	0.29	**0.067**
SO_2	46.38	0.02	46.38	0.02	**0.005**
TOC	850.24	0.43	850.24	0.43	**0.097**
Methane	177.78	0.09	177.78	0.09	**0.020**
VOC	425.12	0.21	425.12	0.21	**0.049**
Total HAP	145.93	0.07	145.93	0.07	**0.017**

Note 1 - No controls on boiler emissions other than low NOX burners

EKU AI 2820 - New Natural Gas Fired Emergency Generator - EG 62
Emission Calculations

EG 62 - Keen Johnson

Power Output:	25	kW	**Fuel Use Rate:**	0.00031	MMSCF/hr
	40	hp			
Max Usage:	8,760	hr/yr	**NG Heating Value:**	1020	Btu/scf
Acutal Usage:	100	hr/yr			

Generator Engine Emission Factors			
Pollutant	**Emission Factor**		**Data Source**
CO	3.72E+00	lb/MMBtu	AP 42, Table 3.2-3
CO_2	1.10E+02	lb/MMBtu	AP 42, Table 3.2-3
NO_x	2.27E+00	lb/MMBtu	AP 42, Table 3.2-3
SO_2	5.88E-04	lb/MMBtu	AP 42, Table 3.2-3
PM	9.91E-03	lb/MMBtu	AP 42, Table 3.2-3
PM_{10}	9.50E-03	lb/MMBtu	AP 42, Table 3.2-3
$PM_{2.5}$	9.50E-03	lb/MMBtu	AP 42, Table 3.2-3
VOC	2.96E-02	lb/MMBtu	AP 42, Table 3.2-3
Lead	N/A	N/A	N/A
Methane	2.30E-01	lb/MMBtu	AP 42, Table 3.2-3
Total HAP	1.03E-01	lb/MMBtu	AP 42, Table 3.2-3
1,1,2,2-Tetrachloroethane	2.53E-05	lb/MMBtu	AP 42, Table 3.2-3
1,1,2-Trichloroethane	1.53E-05	lb/MMBtu	AP 42, Table 3.2-3
1,3-Butadiene	6.63E-04	lb/MMBtu	AP 42, Table 3.2-3
1,3-Dichloropropene	1.27E-05	lb/MMBtu	AP 42, Table 3.2-3
Acetaldehyde	2.79E-03	lb/MMBtu	AP 42, Table 3.2-3
Acrolein	2.63E-03	lb/MMBtu	AP 42, Table 3.2-3
Benzene	1.58E-03	lb/MMBtu	AP 42, Table 3.2-3
Butyr/isobutyraldehyde	4.86E-05	lb/MMBtu	AP 42, Table 3.2-3
Carbon Tetrachloride	1.77E-05	lb/MMBtu	AP 42, Table 3.2-3
Chlorobenzene	1.29E-05	lb/MMBtu	AP 42, Table 3.2-3
Chloroform	1.37E-05	lb/MMBtu	AP 42, Table 3.2-3
Ethane	7.04E-02	lb/MMBtu	AP 42, Table 3.2-3
Ethylbenzene	2.48E-05	lb/MMBtu	AP 42, Table 3.2-3
Ethylene Dibromide	2.13E-05	lb/MMBtu	AP 42, Table 3.2-3
Formaldehyde	2.05E-02	lb/MMBtu	AP 42, Table 3.2-3
Methanol	3.06E-03	lb/MMBtu	AP 42, Table 3.2-3
Methylene Chloride	4.12E-05	lb/MMBtu	AP 42, Table 3.2-3
Naphthalene	9.71E-05	lb/MMBtu	AP 42, Table 3.2-3
PAH	1.41E-04	lb/MMBtu	AP 42, Table 3.2-3
Styrene	1.19E-05	lb/MMBtu	AP 42, Table 3.2-3
Toluene	5.58E-04	lb/MMBtu	AP 42, Table 3.2-3
Vinyl Chloride	7.18E-06	lb/MMBtu	AP 42, Table 3.2-3
Xylene	1.95E-04	lb/MMBtu	AP 42, Table 3.2-3

Annual Emissions Calculations (EG 62)					
Pollutant	**Maximum Usage (8,760 hr/yr)**		**Regulatory Limit (100 hr/yr)**		**Pollutant**
	lb/yr	ton/yr	lb/yr	ton/yr	
CO	10,304.07	5.15	20.50	1.03E-02	**CO**
CO_2	304,690.32	152.35	606.27	0.30	**CO_2**
NMHC + NO_x	6,287.70	3.14	12.51	0.01	**NMHC + NO_x**
SO_2	1.63	0.00	0.02	9.30E-06	**SO_2**
PM	27.45	0.01	0.31	1.57E-04	**PM**
PM_{10}	26.31	0.01	0.30	1.50E-04	**PM_{10}**
$PM_{2.5}$	26.31	0.01	0.30	1.50E-04	**$PM_{2.5}$**
VOC	81.99	0.04	0.94	4.68E-04	**VOC**
Lead	N/A	N/A	N/A	N/A	**Lead**
Methane	637.08	0.32	7.27	3.64E-03	**Methane**
Total HAP	284.93	0.14	3.25	1.63E-03	**Total HAP**

Division for Air Quality

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DEP7007V

Applicable Requirements and Compliance Activities

___ Section V.1: Emission and Operating Limitation(s)

___ Section V.2: Monitoring Requirements

___ Section V.3: Recordkeeping Requirements

___ Section V.4: Reporting Requirements

___ Section V.5: Testing Requirements

___ Section V.6: Notes, Comments, and Explanations

Additional Documentation
___ Complete DEP7007AI

Source Name: **Eastern Kentucky University**

KY EIS (AFS) #: **21-** **151-00007**

Permit #: **F-20-006 R3**

Agency Interest (AI) ID: **2820**

Date: 9/23/2024

Section V.1: Emission and Operating Limitation(s)

Emission Unit #	Emission Unit Description	Applicable Regulation or Requirement	Pollutant	Emission Limit (if applicable)	Voluntary Emission Limit or Exemption (if applicable)	Operating Requirement or Limitation (if applicable)	Method of Determining Compliance with the Emission and Operating Requirement(s)
		See attached draft FESOP pgs. 5, 17, and 30-31; applicable regulations and requirements for six new natural gas fired indirect heat exchangers subject to 401 KAR 52:030 and 59:015; and one new ntaural gas internal combustion engine subject to 401 KAR 63:002 and 60:005.					

Section V.2: Monitoring Requirements

Emission Unit #	Emission Unit Description	Pollutant	Applicable Regulation or Requirement	Parameter Monitored	Description of Monitoring

See attached draft FESOP pgs. 5, 17, and 30-31; applicable regulations and requirements for six new natural gas fired indirect heat exchangers subject to 401 KAR 52:030 and 59:015; and one new ntaural gas internal combustion engine subject to 401 KAR 63:002 and 60:005.

Section V.3: Recordkeeping Requirements

Emission Unit #	Emission Unit Description	Pollutant	Applicable Regulation or Requirement	Parameter Recorded	Description of Recordkeeping
		See attached draft FESOP pgs. 5, 17, and 30-31; applicable regulations and requirements for six new natural gas fired indirect heat exchangers subject to 401 KAR 52:030 and 59:015; and one new ntaural gas internal combustion engine subject to 401 KAR 63:002 and 60:005.			

Section V.4: Reporting Requirements

Emission Unit #	Emission Unit Description	Pollutant	Applicable Regulation or Requirement	Parameter Reported	Description of Reporting
			See attached draft FESOP pgs. 5, 17, and 30-31; applicable regulations and requirements for six new natural gas fired indirect heat exchangers subject to 401 KAR 52:030 and 59:015; and one new ntaural gas internal combustion engine subject to 401 KAR 63:002 and 60:005.		

Section V.5: Testing Requirements

Emission Unit #	Emission Unit Description	Pollutant	Applicable Regulation or Requirement	Parameter Tested	Description of Testing
			See attached draft FESOP pgs. 5, 17, and 30-31; applicable regulations and requirements for six new natural gas fired indirect heat exchangers subject to 401 KAR 52:030 and 59:015; and one new ntaural gas internal combustion engine subject to 401 KAR 63:002 and 60:005.		

Section V.6: Notes, Comments, and Explanations

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

EU11-72, not all Inclusive, and EU100 - EU~~108~~ 111, all inclusive; ~~Thirty-Eight (38)~~ Forty-one (41) New Natural Gas Fired Indirect Heat Exchangers

Description:

Emission Units #	Heat Input Capacity (MMBtu/hr)	Location	Manufacturer	Year
11	3.348	Campbell	Sellers	1973
16	2.4	Commonwealth	Sellers	1987
19	6.276	Moore Science	Sellers	1987
23	2.4	Palmer	Sellers	1989
24	1.256	Dizney Bldg	Sellers	1990
25	5.231	Wallace	Sellers	1990
26	1.674	Rowlett	Weil-McLain	2021
28	2.4	Walters Hall	Sellers	1998
41	2.929	Business & Technology	Sellers	2005
42	1.44	Clay	Lochinvar	2007
45	1.0	Business & Technology (2)	Lochinvar	2009
46	2.0	Performing Arts	Lochinvar	2010
47	2.0	Performing Arts (2)	Lochinvar	2010
48	2.0	Performing Arts (3)	Lochinvar	2010
49	2.0	Alumni Coliseum	Weil-McLain	2010
50	8.369	Science Bldg (NSB)	Sellers	2010
51	8.369	Science Bldg (NSB)	Sellers	2010
54	1.993	South Hall	A.B. Young	2013
55	1.993	South Hall	A.B. Young	2013
57	5.231	Keene Hall	Sellers	2015
58	5.231	Keene Hall	Sellers	2015
59	5.231	Palmer	Sellers	2015
60	5.231	Walters	Sellers	2015
61	2.080	Gentry Bldg.	Weil-McLain	2015
68	2.07	Arlington Pool	Lochinvar	2018
69	2.0	Case Dining Hall	Fulton	2017
70	2.0	Case Dining Hall	Fulton	2017
71	1.999	North Hall	Lochinvar	2016
72	1.999	North Hall	Lochinvar	2016
100	1.999	Martin Hall	Lochinvar	2017
101	1.999	Martin Hall	Lochinvar	2017
102	2.0	Combs Bldg.	Lochinvar	2020
103	2.0	Combs Bldg.	Lochinvar	2020
104	2.511	Burrier Bldg.	Sellers	2020
105	2.0	Mattox	RBI	2023
106	2.0	Mattox	RBI	2023
107	1.5	Whitlock	Lochinvar	2023
108	1.5	Whitlock	Lochinvar	2023
109	**3.0**	**Alumni Coliseum**	**Lochinvar**	**2024**
110	**3.0**	**Alumni Coliseum**	**Lochinvar**	**2024**
111	**3.0**	**Alumni Coliseum**	**Lochinvar**	**2024**

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

EG 01-18 (EG0119) ~~**Seventeen (17)**~~ **Sixteen (16) Existing Natural Gas Fired Emergency Generators**

Description:
Total Capacity ~~830~~ 815 KW
Built before July 1, 2008 or January 1, 2009 and is consider an existing institutional emergency stationary RICE located at an area source of HAP emissions that do not operate for the purpose specified in 40 CFR 63.6640(f)(4)(ii).

Emission Unit #	Output Rating		Location
	kW	hp	
EG 01	80	107.2	Telford Hall
EG 02	45	60.3	Campbell
EG 03	15	20.1	Foster
EG 04	30	40.2	Moore
EG 05	12.5	16.8	Cammack
EG 06	12.5	16.8	Keith
~~EG 07~~	~~15~~	~~20.1~~	~~Keen Johnson~~
EG 08	85	113.9	Fitzpatrick
EG 10	15	20.1	Wallace
EG 11	100	134	Rowlett
EG 12	85	113.9	Mattox
EG 13	45	60.3	Gentry
EG 14	35	46.9	Commonwealth
EG 15	100	134	Begley
EG 16	35	46.9	Keen
EG 17	45	60.3	Carter
EG 18	75	100.5	Model

APPLICABLE REGULATIONS:
401 KAR 63:020, *Potentially hazardous matter or toxic substances.*

PRECLUDED REGULATIONS:
401 KAR 63:002, Section 2(4)(eeee) 40 C.F.R. 63.6580 to 63.6675, Tables 1a to 8, and Appendix A (**Subpart ZZZZ**), *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.*

1. **Operating Limitations:**
   a. The permittee shall operate these units according to the following requirements to ensure that they meet the definition of "emergency stationary RICE" in 40 CFR 63.6675 in order to be considered emergency stationary RICE. [40 CFR 63.6585(f)(3); 63.6675; and 63.6640(f)]

   b. There is no time limit on the use of emergency stationary RICE emergency situations. [40 CFR 63.6640(f)(1)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

EG 48 -~~6162~~ (EG4856) **~~Thirteen~~ Fourteen (~~13~~ 14) New Natural Gas Emergency**

Generators Description: (Total Capacity ~~1,318~~ 1,343 KW) built after January 1, 2009

Emission Unit #	Output Rating		Location
	kW	hp	
EG 48	70	93.8	EKU Police
EG 49	25	33.5	Stratton
EG 50	36	48.3	Miller/Beckham/McCready
EG 51	60	80	Palmer Hall
EG 52	20	26.8	Burnam
EG 53	300	402	Perkins
EG 54	100	134	North Hall
EG 55	100	134	Martin
EG 56	50	67	Hanger Field
EG 58	250	347	Powell Building
EG 59	80	127	Student Wellness & Recreation
EG 60	77	103	Wallace
EG 61	150	201	Case Dining Hall
EG 62	**25**	**33.5**	**Keen Johnson**

Applicable Regulations

401 KAR 63:002, Section 2(4)(eeee) 40 C.F.R. 63.6580 to 63.6675, Tables 1a to 8, and Appendix A (**Subpart ZZZZ**), *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.*

401 KAR 60:005, Section 2(2)(eeee) 40 C.F.R. 60.4230 to 60.4248, Tables 1 to 4 (**Subpart JJJJ**), *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines.*

1. **Operating Limitations:**
   a. The permittee shall operate the emergency stationary ICE according to the requirements in 40 CFR 60.4243(d)(1) through (3). In order for the engine to be considered an emergency stationary ICE under 40 CFR 60, Subpart JJJJ, any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for 50 hours per year, as described in 40 CFR 60.4243(d)(1) through (3), is prohibited. If the permittee does not operate the engine according to the requirements in 40 CFR 60.4243(d)(1) through (3), the engine will not be considered an emergency engine under 40 CFR 60, Subpart JJJJ and shall meet all requirements for non-emergency engines. [40 CFR 60.4243(d)]
      i. There is no time limit on the use of emergency stationary ICE in emergency situations. [40 CFR 60.4243(d)(1)]

      ii. The permittee may operate the emergency stationary ICE for any combination of the purposes specified in 40 CFR 60.4243(d)(2)(i) for a maximum of 100 hours per calendar year. Any operation for non-emergency situations as allowed in 40 CFR 60.4243(d)(3) counts as part of the 100 hours per calendar year allowed in 40 CFR 60.4243(d)(2). Emergency stationary ICE may be operated for maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or

SECTION C - INSIGNIFICANT ACTIVITIES

The following listed activities have been determined to be insignificant activities for this source pursuant to 401 KAR 52:030, Section 6. Although these activities are designated as insignificant the permittee must comply with the applicable regulation. Process and emission control equipment at each insignificant activity subject to an opacity standard shall be inspected monthly and a qualitative visible emissions evaluation made. Results of the inspection, evaluation, and any corrective action shall be recorded in a log.

Description Generally	**Applicable Regulation**
1. Woodworking Shop	401 KAR 61:020
2. Diesel fuel tank	NA

3. Six Natural Gas Fired Kilns: NA

Output Rating (MMBtu/hr)	Location
0.03	Campbell Rm 118
0.374	Campbell Rm 103
0.1	Campbell Sculptor Patio
0.4	Campbell Sculptor Patio
0.3	South of McKinney
0.327	Campbell 103

4. **Seventy-One** ~~**Sixty-Eight**~~ Natural Gas Fired Indirect Heat Exchangers (less than 1 MMBtu/hr each): NA Total Capacity **19** ~~**17.5**~~ MMBtu/hr

Output Rating (MMBtu/hr)	Location	Year
0.837	Gibson	1991
0.720	Sullivan	1998
0.960	Burnam	1997
0.840	Moberly	1994
0.250	Weaver	1997
0.500	McKinney Skills	2001
0.685	Presnell	1972
0.685	Presnell	1972
0.999	Telford Hall	2006
0.962	Black	2008
0.999	Chapel of Meditation	1998
0.999	McGregor Hall	2013
0.999	McGregor Hall	2013
0.076	Blanton House	2006
0.13	Arlington Shed	2013
0.1999	Arlington Swim Lockers	1993
0.1999	Arlington Swim Lockers	1993
0.1999	Arlington Swim Lockers	1993
0.45	Arlington House	1969

SECTION C - INSIGNIFICANT ACTIVITIES (CONTINUED)

Output Rating (MMBtu/hr)	Location	Year
0.52	Arlington House	2004
0.1999	Arlington Pro House	2018
0.5	Martin Hall	2017
0.5	Martin Hall	2017
0.5	Martin Hall	2017
0.5	North Hall	2016
0.5	North Hall	2016
0.5	North Hall	2016
0.1999	Begley Bldg Visitor's Locker Room	2016
0.1999	Begley Bldg Visitor's Locker Room	2016
16 @ 0.25	Greenhouse Bldgs 1-4	2004
0.20	Greenhouse Bldg 5	2004
0.20	Greenhouse Bldg 5	2004
0.20	Greenhouse Bldg 6	2004
0.15	Greenhouse Bldg 6	1996
0.25	Greenhouse Bldg 7	1992
0.25	Greenhouse Bldg 7	1992
0.199	Weaver	2019
8 @ 0.199	Begley Bldg	2019
0.4999	Case Dining Hall	2017
0.4999	Case Dining Hall	2017
0.999	Student Health	2021
0.999	Model Lab School	2023
0.999	Model Lab School	2023
0.999	Donovan Building	2023
0.999	Donovan Building	2023
0.99	Whitlock Building	2023
0.399	Burnam Hall	2021
0.399	Burnam Hall	2021
0.6	Clay Hall	2023
0.6	Clay Hall	2023
0.5	**Keene Hall**	**2024**
0.5	**Keene Hall**	**2024**
0.5	**Keene Hall**	**2024**

EASTERN KENTUCKY UNIVERSITY

Serving Kentuckians Since 1906

December 3, 2024

Ms. Stacie Daniels
Supervisor, Combustion Section
Kentucky Division for Air Quality
300 Sower Boulevard, First Floor
Frankfort, KY 40601

Electronically Submitted via EEC eForms

RE: Permit Renewal – Eastern Kentucky University, AI 2820

Dear Ms. Daniels:

Eastern Kentucky University (EKU) located in Richmond, Ky. operates under a conditional major operating permit no. F-20-006 R3 that was issued December 4, 2023. This permit expires June 15, 2025, and per the permit terms and conditions, EKU is required to submit a permit renewal application 180 days prior to that expiration date.

This letter and the attached form DEP 7007AI have been prepared to submit the permit renewal application for this facility in compliance with the permit terms and conditions.

PERMIT CHANGES

Over the last five years, EKU has added and removed several indirect natural-gas fired heat exchangers and diesel-fired emergency generators. These modifications have all been submitted to the Division in accordance with EKU's operating permit. Other than these minor modifications, the facility has not changed any process or operating condition. EKU does not request any changes to the facility-wide CO and NOx emissions, which are limited to 90 tpy each in order to maintain the facility's conditional major operating status.

Please let me know if you need any additional information in support of this permit renewal.

Sincerely,

Dekia Gaither
Director of Environmental Health and Safety

CC: Bryan Makinen, EKU, Chief Campus Operations Officer
Lucy Pacholik, PE, Tetra Tech

Enclosures: Permit Application Forms

Division for Air Quality

300 Sower Boulevard

Frankfort, KY 40601

(502) 564-3999

DEP7007AI

Administrative Information

___ Section AI.1: Source Information

___ Section AI.2: Applicant Information

___ Section AI.3: Owner Information

___ Section AI.4: Type of Application

___ Section AI.5: Other Required Information

___ Section AI.6: Signature Block

___ Section AI.7: Notes, Comments, and Explanations

Additional Documentation

___ Additional Documentation attached

Source Name: **Eastern Kentucky University**

KY EIS (AFS) #: **21-151-00007**

Permit #: **F-20-006 R3**

Agency Interest (AI) ID: **2820**

Date: **12/2/2024**

Section AI.1: Source Information

Physical Location Address:	**Street:**	521 Lancaster Avenue; Adams House				
	City:	Richmond	**County:**	Madison	**Zip Code:**	40475-3102
Mailing Address:	**Street or P.O. Box:**	521 Lancaster Avenue				
	City:	Richmond	**State:**	KY	**Zip Code:**	40475-3102

Standard Coordinates for Source Physical Location

Longitude: -84.29844 (decimal degrees) **Latitude:** 37.73816 (decimal degrees)

Primary (NAICS) Category: Colleges, Universities, and Professional Schools **Primary NAICS #:** 611310.00

Classification (SIC) Category: Colleges, Universities, and Professional Schools

Primary SIC #: 8221

Briefly discuss the type of business conducted at this site: Educational Institution

Description of Area Surrounding Source: ☐ Rural Area ☐ Industrial Park ☑ Residential Area ☐ Urban Area ☐ Industrial Area ☑ Commercial Area

Is any part of the source located on federal land? ☐ Yes ☐ No

Number of Employees: 1640

Approximate distance to nearest residence or commercial property: *200 ft*

Property Area: **892 ac**

Is this source portable? ☐ Yes ☑ No

What other environmental permits or registrations does this source currently hold or need to obtain in Kentucky?

NPDES/KPDES:	☑ Currently Hold	☐ Need	☐ N/A
Solid Waste:	☐ Currently Hold	☐ Need	☐ N/A
RCRA:	☑ Currently Hold	☐ Need	☐ N/A
UST:	☐ Currently Hold	☐ Need	☐ N/A

Type of Regulated Waste Activity: ☑ Mixed Waste Generator ☐ Generator ☐ Recycler ☐ Other: _____ ☐ U.S. Importer of Hazardous Waste ☐ Transporter ☐ Treatment/Storage/Disposal Facility ☐ N/A

Section AI.2: Applicant Information

Applicant Name: Dekia Gaither

Title: (if individual) Director of Environmental Health and Safety

Mailing Address:
Street or P.O. Box: 521 Lancaster Avenue; Adams House
City: Richmond **State:** KY **Zip Code:** 40475-3102

Email: (if individual) Dekia.Gaither@eku.edu

Phone: (859) 622-3437

Technical Contact

Name: same as above

Title:

Mailing Address:
Street or P.O. Box:
City: **State:** **Zip Code:**

Email:

Phone:

Air Permit Contact for Source

Name: Bryan Makinen

Title: AVP for Facilities Mangement and Safety

Mailing Address:
Street or P.O. Box: 424 Lancaster Avenue, Adams House
City: Richmond **State:** KY **Zip Code:** 40475-3102

Email: Bryan.Makinen@eku.edu

Phone: (859) 622-2421

Section AI.3: Owner Information

☑ **Owner same as applicant**

Name: _____

Title: _____

Mailing Address: **Street or P.O. Box:** _____

City: _____ **State:** _____ **Zip Code:** _____

Email: _____

Phone: _____

List names of owners and officers of the company who have an interest in the company of 5% or more.

Name	Position

Section AI.4: Type of Application

Current Status: ☐ Title V ☑ Conditional Major ☐ State-Origin ☐ General Permit ☐ Registration ☐ None

Requested Action: *(check all that apply)*

☐ Name Change	☐ Initial Registration	☐ Significant Revision	☐ Administrative Permit Amendment
☑ Renewal Permit	☐ Revised Registration	☐ Minor Revision	☐ Initial Source-wide OperatingPermit
☐ 502(b)(10)Change	☐ Extension Request	☐ Addition of New Facility	☐ Portable Plant Relocation Notice
☐ Revision	☐ Off Permit Change	☐ Landfill Alternate Compliance Submittal	☐ Modification of Existing Facilities
☐ Ownership Change	☐ Closure		

Requested Status: ☐ Title V ☑ Conditional Major ☐ State-Origin ☐ PSD ☐ NSR ☐ Other: _____

Is the source requesting a limitation of potential emissions? ☑ Yes ☐ No

Pollutant:	Requested Limit:	Pollutant:	Requested Limit:
☐ Particulate Matter		☐ Single HAP	
☐ Volatile Organic Compounds (VOC)		☐ Combined HAPs	
☑ Carbon Monoxide	90 tpy	☐ Air Toxics (40 CFR 68, Subpart F)	
☑ Nitrogen Oxides	90 tpy	☐ Carbon Dioxide	
☐ Sulfur Dioxide		☐ Greenhouse Gases (GHG)	
☐		☐	

For New Construction:

Proposed Start Date of Construction: *(MM/YYYY)* _____ **Proposed Operation Start-Up Date:** *(MM/YYYY)* _____

For Modifications:

Proposed Start Date of Modification: *(MM/YYYY)* _____ **Proposed Operation Start-Up Date:** *(MM/YYYY)* _____

Applicant is seeking coverage under a permit shield. ☐ **Yes** ☑ **No** **Identify any non-applicable requirements for which permit shield is sought on a separate attachment to the application.**

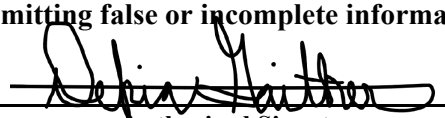
Section AI.5 Other Required Information

Indicate the documents attached as part of this application:

- ☐ DEP7007A Indirect Heat Exchangers and Turbines
- ☐ DEP7007B Manufacturing or Processing Operations
- ☐ DEP7007C Incinerators and Waste Burners
- ☐ DEP7007F Episode Standby Plan
- ☐ DEP7007J Volatile Liquid Storage
- ☐ DEP7007K Surface Coating or Printing Operations
- ☐ DEP7007L Mineral Processes
- ☐ DEP7007M Metal Cleaning Degreasers
- ☐ DEP7007N Source Emissions Profile
- ☐ DEP7007P Perchloroethylene Dry Cleaning Systems
- ☐ DEP7007R Emission Offset Credit
- ☐ DEP7007S Service Stations
- ☐ DEP7007T Metal Plating and Surface Treatment Operations
- ☐ DEP7007V Applicable Requirements and Compliance Activities
- ☐ DEP7007Y Good Engineering Practice and Stack Height Determination
- ☐ DEP7007AA Compliance Schedule for Non-complying Emission Units
- ☐ DEP7007BB Certified Progress Report
- ☐ DEP7007CC Compliance Certification
- ☐ DEP7007DD Insignificant Activities
- ☐ DEP7007EE Internal Combustion Engines
- ☐ DEP7007FF Secondary Aluminum Processing
- ☐ DEP7007GG Control Equipment
- ☐ DEP7007HH Haul Roads
- ☐ Confidentiality Claim
- ☐ Ownership Change Form
- ☐ Secretary of State Certificate
- ☐ Flowcharts or diagrams depicting process
- ☐ Digital Line Graphs (DLG) files of buldings, roads, etc.
- ☐ Site Map
- ☐ Map or drawing depicting location of facility
- ☐ Safety Data Sheet (SDS)
- ☐ Emergency Response Plan
- ☐ Other: _____

Section AI.6: Signature Block

I, the undersigned, hereby certify under penalty of law, that I am a responsible official*, and that I have personally examined, and am familiar with, the information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the information is on knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false or incomplete information, including the possibility of fine or imprisonment.



Authorized Signature

12/3/2024

Date

Dekia Gaither

Type or Printed Name of Signatory

Director of Environmental Health and Safety

Title of Signatory

*Responsible official as defined by 401 KAR 52:001.

Section AI.7: Notes, Comments, and Explanations

EASTERN KENTUCKY UNIVERSITY

Serving Kentuckians Since 1906

February 7, 2025

Ms. Stacie Daniels
Supervisor, Combustion Section
Kentucky Division for Air Quality
300 Sower Boulevard, First Floor
Frankfort, KY 40601

Electronically Submitted via EEC eForms

RE: Minor Air Permit Revision Application – Eastern Kentucky University, AI 2820

Dear Ms. Daniels:

Eastern Kentucky University (EKU) located in Richmond, Ky. operates under a conditional major operating permit no. F-20-006 R3 that was issued December 2, 2023.

EKU has prepared this application to request a minor permit revision to register two (2) natural gas-fired emergency generators. These modifications will result in a minor increase in the facility's potential emissions; however, EKU will continue to monitor natural gas usage such that facility-wide CO and NOx emissions stay below the limitations specified in the current air permit (90 tpy each).

SUMMARY OF PLANNED FACILITY CHANGES

EG 63 – Keene Hall

EKU installed one (1) Generac natural gas-fired emergency generator rated at 130 kW at the Keene Hall dormitory in July 2024, with a start-up date in July 2024. The generator will only be used for emergency purposes and will run for a maximum of 100 hours per year. The Generac engine is EPA Certified for Stationary Emergency Application. The existing 35 kW natural gas emergency generator listed on the current air permit (EG 16) has been replaced with this new unit.

EG 64 – Keith Hall

EKU installed one (1) Cummins natural gas-fired emergency generator rated at 25 kW at the Keene Hall dormitory in July 2024, with a start-up date in July 2024. The generator will only be used for emergency purposes and will run for a maximum of 100 hours per year. The Cummins engine is EPA Certified for Stationary Emergency Application. The existing 12.5 kW natural gas emergency generator listed on the current air permit (EG 06) has been replaced with this new unit.

PERMIT APPLICATION DISCUSSION

EKU has included the following permit application forms for consideration of this requested change at the facility:

- DEP 7007AI – Administrative Information (minor permit revision)
- DEP 7007EE – Internal Combustion Engines
    - Manufacturer's specification data sheets
    - EPA Certification for Engine Family
- DEP 7007N – Source Emissions Profile
    - Emission factors (AP42)
    - Emission calculations based on 8,760 hours of operation (uncontrolled) and 500 hours of operation (controlled) for emergency generators.
- DEP 7007V – Applicable Requirements and Compliance Activities
    - Draft FESOP language for "New Natural Gas Emergency Generators".
- Note — Form DEP 7007GG is not included because there are no controls on these units.

DRAFT PERMIT

EKU has included with this application recommended draft language in the permit section related to "New Natural Gas Emergency Generators." All the applicable regulations for EKU's current units in this permit section will apply to the new units. The air permit sections that did not change or were unaffected by the planned changes are not included in this submittal.

Upon review of the application, please call if you need additional information or clarification.

MINOR REVISION CERTIFICATION

With my signature below, I am certifying that the changes described in this application meet the criteria for use of minor permit revision procedures at 401 KAR 52:030, Section 14 and I further request that the Division use this minor revision procedure for this application.

Sincerely,

Dekia Gaither
Director of Environmental Health and Safety

CC: Bryan Makinen, EKU, Chief Campus Operations Officer
Lucy Pacholik, PE, Tetra Tech

Enclosures: Permit Application Forms

Division for Air Quality

300 Sower Boulevard

Frankfort, KY 40601

(502) 564-3999

DEP7007AI

Administrative Information

___ Section AI.1: Source Information

___ Section AI.2: Applicant Information

___ Section AI.3: Owner Information

___ Section AI.4: Type of Application

___ Section AI.5: Other Required Information

___ Section AI.6: Signature Block

___ Section AI.7: Notes, Comments, and Explanations

Additional Documentation

___ Additional Documentation attached

Source Name: **Eastern Kentucky University**

KY EIS (AFS) #: **21-151-00007**

Permit #: **F-20-006 R3**

Agency Interest (AI) ID: **2820**

Date: **2/7/2025**

Section AI.1: Source Information

Physical Location Address:	**Street:**	521 Lancaster Avenue; Adams House				
	City:	Richmond	**County:**	Madison	**Zip Code:**	40475-3102
Mailing Address:	**Street or P.O. Box:**	521 Lancaster Avenue				
	City:	Richmond	**State:**	KY	**Zip Code:**	40475-3102

Standard Coordinates for Source Physical Location

Longitude: -84.29844 (decimal degrees) **Latitude:** 37.73816 (decimal degrees)

Primary (NAICS) Category: Colleges, Universities, and Professional Schools **Primary NAICS #:** 611310.00

Classification (SIC) Category: Colleges, Universities, and Professional Schools

Primary SIC #: 8221

Briefly discuss the type of business conducted at this site: Educational Institution

Description of Area Surrounding Source: ☐ Rural Area ☐ Industrial Park ☑ Residential Area ☐ Urban Area ☐ Industrial Area ☑ Commercial Area

Is any part of the source located on federal land? ☐ Yes ☐ No

Number of Employees: 1640

Approximate distance to nearest residence or commercial property: *200 ft*

Property Area: **892 ac**

Is this source portable? ☐ Yes ☑ No

What other environmental permits or registrations does this source currently hold or need to obtain in Kentucky?

NPDES/KPDES:	☑ Currently Hold	☐ Need	☐ N/A
Solid Waste:	☐ Currently Hold	☐ Need	☐ N/A
RCRA:	☑ Currently Hold	☐ Need	☐ N/A
UST:	☐ Currently Hold	☐ Need	☐ N/A

Type of Regulated Waste Activity:

☑ Mixed Waste Generator ☐ Generator ☐ Recycler ☐ Other: _____

☐ U.S. Importer of Hazardous Waste ☐ Transporter ☐ Treatment/Storage/Disposal Facility ☐ N/A

Section AI.2: Applicant Information

Applicant Name: Dekia Gaither

Title: (if individual) Director of Environmental Health and Safety

Mailing Address:
Street or P.O. Box: 521 Lancaster Avenue; Adams House
City: Richmond **State:** KY **Zip Code:** 40475-3102

Email: (if individual) Dekia.Gaither@eku.edu

Phone: (859) 622-3437

Technical Contact

Name: same as above

Title:

Mailing Address:
Street or P.O. Box:
City: **State:** **Zip Code:**

Email:

Phone:

Air Permit Contact for Source

Name: Bryan Makinen

Title: AVP for Facilities Mangement and Safety

Mailing Address:
Street or P.O. Box: 424 Lancaster Avenue, Adams House
City: Richmond **State:** KY **Zip Code:** 40475-3102

Email: Bryan.Makinen@eku.edu

Phone: (859) 622-2421

Section AI.3: Owner Information

☑ **Owner same as applicant**

Name: _____

Title: _____

Mailing Address: **Street or P.O. Box:** _____

City: _____ **State:** _____ **Zip Code:** _____

Email: _____

Phone: _____

List names of owners and officers of the company who have an interest in the company of 5% or more.

Name	Position

Section AI.4: Type of Application

Current Status: ☐ Title V ☑ Conditional Major ☐ State-Origin ☐ General Permit ☐ Registration ☐ None

Requested Action: *(check all that apply)*

☐ Name Change	☐ Initial Registration	☐ Significant Revision	☐ Administrative Permit Amendment
☐ Renewal Permit	☐ Revised Registration	☑ Minor Revision	☐ Initial Source-wide OperatingPermit
☐ 502(b)(10)Change	☐ Extension Request	☐ Addition of New Facility	☐ Portable Plant Relocation Notice
☐ Revision	☐ Off Permit Change	☐ Landfill Alternate Compliance Submittal	☐ Modification of Existing Facilities
☐ Ownership Change	☐ Closure		

Requested Status: ☐ Title V ☑ Conditional Major ☐ State-Origin ☐ PSD ☐ NSR ☐ Other: _____

Is the source requesting a limitation of potential emissions? ☑ Yes ☐ No

Pollutant:	Requested Limit:	Pollutant:	Requested Limit:
☐ Particulate Matter		☐ Single HAP	
☐ Volatile Organic Compounds (VOC)		☐ Combined HAPs	
☑ Carbon Monoxide	90 tpy	☐ Air Toxics (40 CFR 68, Subpart F)	
☑ Nitrogen Oxides	90 tpy	☐ Carbon Dioxide	
☐ Sulfur Dioxide		☐ Greenhouse Gases (GHG)	
☐		☐	

For New Construction:

Proposed Start Date of Construction: *(MM/YYYY)* 07/2024

Proposed Operation Start-Up Date: *(MM/YYYY)* 07/2024

For Modifications:

Proposed Start Date of Modification: *(MM/YYYY)*

Proposed Operation Start-Up Date: *(MM/YYYY)*

Applicant is seeking coverage under a permit shield. ☐ **Yes** ☑ **No**

Identify any non-applicable requirements for which permit shield is sought on a separate attachment to the application.

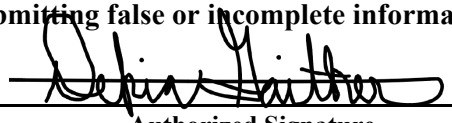
Section AI.5 Other Required Information

Indicate the documents attached as part of this application:

- ☐ DEP7007A Indirect Heat Exchangers and Turbines
- ☐ DEP7007B Manufacturing or Processing Operations
- ☐ DEP7007C Incinerators and Waste Burners
- ☐ DEP7007F Episode Standby Plan
- ☐ DEP7007J Volatile Liquid Storage
- ☐ DEP7007K Surface Coating or Printing Operations
- ☐ DEP7007L Mineral Processes
- ☐ DEP7007M Metal Cleaning Degreasers
- ☑ DEP7007N Source Emissions Profile
- ☐ DEP7007P Perchloroethylene Dry Cleaning Systems
- ☐ DEP7007R Emission Offset Credit
- ☐ DEP7007S Service Stations
- ☐ DEP7007T Metal Plating and Surface Treatment Operations
- ☑ DEP7007V Applicable Requirements and Compliance Activities
- ☐ DEP7007Y Good Engineering Practice and Stack Height Determination
- ☐ DEP7007AA Compliance Schedule for Non-complying Emission Units
- ☐ DEP7007BB Certified Progress Report
- ☐ DEP7007CC Compliance Certification
- ☐ DEP7007DD Insignificant Activities
- ☑ DEP7007EE Internal Combustion Engines
- ☐ DEP7007FF Secondary Aluminum Processing
- ☐ DEP7007GG Control Equipment
- ☐ DEP7007HH Haul Roads
- ☐ Confidentiality Claim
- ☐ Ownership Change Form
- ☐ Secretary of State Certificate
- ☐ Flowcharts or diagrams depicting process
- ☐ Digital Line Graphs (DLG) files of buldings, roads, etc.
- ☐ Site Map
- ☐ Map or drawing depicting location of facility
- ☐ Safety Data Sheet (SDS)
- ☐ Emergency Response Plan
- ☑ Other: Manufacturer Specification Sheets and Emissions Calculation Sheets

Section AI.6: Signature Block

I, the undersigned, hereby certify under penalty of law, that I am a responsible official*, and that I have personally examined, and am familiar with, the information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the information is on knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false or incomplete information, including the possibility of fine or imprisonment.



Authorized Signature

2/7/2025

Date

Dekia Gaither

Type or Printed Name of Signatory

Director of Environmental Health and Safety

Title of Signatory

*Responsible official as defined by 401 KAR 52:001.

Section AI.7: Notes, Comments, and Explanations

Division for Air Quality

300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007EE

Internal Combustion Engines

___ Section EE.1: General Information
___ Section EE.2: Operating Information
___ Section EE.3: Design Information
___ Section EE.4: Fuel Information
___ Section EE.5: Emission Factor Information
___ Section EE.6: Notes, Comments, and Explanations

Additional Documentation

___ Complete DEP7007AI, DEP7007N, DEP7007V, and DEP7007GG

___ Attach EPA certification of the engine

Source Name: **Eastern Kentucky University**
KY EIS (AFS) #: **21-151-00007**
Permit #: **F-20-006-R3**
Agency Interest (AI) ID: **2820**
Date: **2/7/2025**

Section EE.1: General Information

Emission Unit #	Emission Unit Name	Control Device ID	Stack ID	Manufacturer	Model Number	Model Year	Date of Manufacture	Proposed/Actual Date of Construction Commencement *(MM/YYYY)*	Date Reconstructed/ Modified	List Applicable Regulations
EG 63	Keene Hall	N/A	EG 63	Generac	SG130	2016	06/2016	07/2024	N/A	401 KAR 52:030
EG 64	Keith Hall	N/A	EG 64	Cummins	C25 N6	2018	06/2018	07/2024	N/A	401 KAR 52:030

Section EE.2: Operating Information

Emission Unit #	Engine Purpose (Identify if Non-Emergency, Emergency,Fire/Water Pump, Black-start engine for combustion turbine, Engine Testing)	Hours Operated	Is this engine a rental? *(Yes/No)*	Rental Time Period *(hrs)*	Alternate Operating Scenarios (Describe any operating scenarios in which the engine may be used in a different configuration)
EG 63	Emergency	<100 hr/yr non-emergency	No	N/A	Generator is for emergency use only.
EG 64	Emergency	<100 hr/yr non-emergency	No	N/A	Generator is for emergency use only.

Section EE.3: Design Information

Emission Unit #	Engine Type (Identify all that apply: Commercial, Institutional, Stationary, Non-Road)	Ignition Type (Identify if either Compression or Spark Ignition)	Engine Family (Identify all that apply: 2-stroke, 4-stroke, Rich Burn, Lean Burn)	Maximum Engine Power *(bhp)*	Maximum Engine Speed *(rpm)*	Total Displacement *(L)*	Number of Cylinders
EG 63	Stationary	Spark Ignition	4-stroke, assume rich burn	230	1800	8.9	8
EG 64	Stationary	Spark Ignition	4-stroke, assume rich burn	40	1800	2.4	4

Section EE.4: Fuel Information

Emission Unit #	Identify if Primary, Secondary, or Tertiary Fuel	Fuel Type (Identify if Diesel, Gasoline, Natural Gas, Liquefied Petroleum Gas (LPG), Landfill/Digester Gas, or Other)	Fuel Grade	Percent Time Used *(%)*	Maximum Fuel Consumption	Heat Content	Sulfur Content *(%)*	SCC Code	SCC Units
EG 63	Primary	Natural Gas	N/A	1.14	1496 cfh	1020 Btu/scf	0.0025%	20300201	MMSCF
EG 64	Primary	Natural Gas	N/A	1.14	309.5 cfh	1020 Btu/scf	0.0025%	20300201	MMSCF

Section EE.5: Emission Factor Information

Emission factors expressed here are based on the potential to emit.

Emission Unit #	Fuel	Pollutant	Emission Factor	Emission Factor Units	Source of Emission Factor
EG 63	Natural Gas	See Spreadsheet Attached to DEP 7007N	See Spreadsheet Attached to DEP 7007N	See Spreadsheet Attached to DEP 7007N	See Spreadsheet Attached to DEP 7007N
EG 64	Natural Gas	See Spreadsheet Attached to DEP 7007N	See Spreadsheet Attached to DEP 7007N	See Spreadsheet Attached to DEP 7007N	See Spreadsheet Attached to DEP 7007N

Section EE.6: Notes, Comments, and Explanations

SG130 | 9.0 L | 130 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency

Standby Power Rating

130 kW, 163 kVA, 60 Hz

*Assembled in the USA using domestic and foreign parts

Image used for illustration purposes only

Codes and Standards

Generac products are designed to the following standards:.

- UL2200, UL508, UL489
- CSA C22.2
- BS5514 and DIN 6271
- SAE J1349
- NFPA 37, 70, 99, 110
- NEC700, 701, 702, 708
- NEMA ICS10, MG1, 250, ICS6, AB1
- ANSI C62.41
- IBC 2009, CBC 2010, IBC 2012, ASCE 7-05, ASCE 7-10, ICC-ES AC-156 (2012)

Powering Ahead

Generac provides superior quality by designing and manufacturing most of its generator components, such as alternators, enclosures, control systems and communications software. Generac also makes its own spark-ignited engines, and you'll find them on every Generac gaseous-fueled generator. We engineer and manufacture them from the block up — all at our facilities throughout Wisconsin. Applying natural gas and LP-fueled engines to generators requires advanced engineering expertise for reliability, durability and necessary performance. By designing specifically for these dry, hotter-burning fuels, the engines last longer and require less maintenance. Building our own engines also means we control every step of the supply chain and delivery process, so you benefit from single-source responsibility.

Plus, Generac Industrial Power's distribution network provides all parts and service so you don't have to deal with third-party suppliers. It all leads to a positive owner experience and higher confidence level. Generac spark-ignited engines give you more options in commercial and industrial generator applications as well as extended run time from utility-supplied natural gas.

SG130 | 9.0 L | 130 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency

GENERAC | INDUSTRIAL POWER

STANDARD FEATURES

ENGINE SYSTEM
- Oil Drain Extension
- Air Cleaner
- Fan Guard
- Stainless Steel Flexible Exhaust Connection
- Factory Filled Oil and Coolant
- Radiator Duct Adapter (Open Set Only)
- Critical Exhaust Silencer

FUEL SYSTEM
- Fuel Line - NPT Connection
- Primary and Secondary Fuel Shutoff

COOLING SYSTEM
- Closed Coolant Recovery System
- UV/Ozone Resistant Hoses
- Factory-Installed Radiator
- 50/50 Ethylene Glycol Antifreeze
- Radiator Drain Extension

ELECTRICAL SYSTEM
- Battery Charging Alternator
- Battery Cables
- Battery Tray
- Rubber-Booted Engine Electrical Connections
- Solenoid Activated Starter Motor

ALTERNATOR SYSTEM
- GENprotect™
- Class H Insulation Material
- 2/3 Pitch
- Skewed Stator
- Brushless Excitation
- Sealed Bearing
- Amortisseur Winding
- Full Load Capacity Alternator

GENERATOR SET
- Internal Genset Vibration Isolation
- Separation of Circuits - High/Low Voltage
- Separation of Circuits - Multiple Breakers
- Wrapped Exhaust Piping
- Standard Factory Testing
- 2 Year Limited Warranty (Standby Rated Units)
- Silencer Mounted in the Discharge Hood (Enclosed Only)

ENCLOSURE (If Selected)
- Rust-Proof Fasteners with Nylon Washers to Protect Finish
- High Performance Sound-Absorbing Material (Sound Attenuation Enclosures)
- Gasketed Doors
- Stamped Air-Intake Louvers
- Upward Facing Discharge Hoods (Radiator and Exhaust)
- Stainless Steel Lift Off Door Hinges
- Stainless Steel Lockable Handles
- RhinoCoat™ - Textured Polyester Powder Coat Paint

CONTROL SYSTEM

Digital H Control Panel- Dual 4x20 Display

Program Functions
- Programmable Crank Limiter
- 7-Day Programmable Exerciser
- Special Applications Programmable Logic Controller
- RS-232/485 Communications
- 3 Phase Sensing Digital Voltage Regulator
- 2-Wire Start Capability
- Date/Time Fault History (Event Log)
- Isochronous Governor Control
- Waterproof/Sealed Connectors
- Audible Alarms and Shutdowns
- Not in Auto (Flashing Light)
- Auto Off/Manual Switch
- E-Stop (Red Mushroom-Type)
- NFPA110 Level I and II (Programmable)
- Customizable Alarms, Warnings, and Events
- Modbus® Protocol
- Predictive Maintenance Algorithm
- Sealed Boards
- Password Parameter Adjustment Protection
- Single Point Ground
- 16 Channel Remote Trending
- 0.2 msec High Speed Remote Trending
- Alarm Information Automatically Annunciated on the Display

Full System Status Display
- Power Output (kW)
- Power Factor
- kW Hours, Total, and Last Run
- Real/Reactive/Apparent Power
- All Phase AC Voltage
- All Phase Currents
- Oil Pressure
- Coolant Temperature
- Coolant Level
- Engine Speed
- Battery Voltage
- Frequency

Alarms and Warnings
- Oil Pressure
- Coolant Temperature
- Coolant Level
- Engine Overspeed
- Battery Voltage
- Alarms and Warnings Time and Date Stamped
- Snap Shots of Key Operation Parameters During Alarms and Warnings
- Alarms and Warnings Spelled Out (No Alarm Codes)

PARALLELING CONTROLS
- Auto-Synchronization Process
- Isochronous Load Sharing
- Reverse Power Protection
- Maximum Power Protection
- Electrically Operated, Mechanically Held Paralleling Switch
- Sync Check System
- Independent On-Board Paralleling
- Optional Programmable Logic Full Auto Back-Up Controls (PLS)
- Shunt Trip and Auxiliary Contact

SG130 | 9.0 L | 130 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency

CONFIGURABLE OPTIONS

ENGINE SYSTEM
- Engine Block Heater
- Oil Heater
- Air Filter Restriction Indicator
- Stone Guard (Open Set Only)
- Critical Exhaust Silencer (Open Set Only/Standard on Ultra Low Emissions Option)

ELECTRICAL SYSTEM
- 2.5A UL Battery Charger
- 10A UL Battery Charger
- Battery Warmer

ALTERNATOR SYSTEM
- Alternator Upsizing
- Anti-Condensation Heater
- Tropical Coating
- Permanent Magnet Excitation

CIRCUIT BREAKER OPTIONS
- Main Line Circuit Breaker
- Electronic Trip Breakers

GENERATOR SET
- GenLink® Communications Software (English Only)
- Extended Factory Testing (3 Phase Only)
- IBC Seismic Certification
- 8 Position Load Center

ENCLOSURE
- Standard Enclosure
- Level 1 Sound Attenuation
- Level 2 Sound Attenuation
- Steel Enclosure
- Aluminum Enclosure
- AC/DC Enclosure Lighting Kit
- Door Alarm Switch

CONTROL SYSTEM
- Oil Temperature Sender with Indication Alarm
- Remote E-Stop (Break Glass-Type, Surface Mount)
- Remote E-Stop (Red Mushroom-Type, Surface Mount)
- Remote E-Stop (Red Mushroom-Type, Flush Mount)
- Remote Communication - Modem
- 10A Run Relay
- Ground Fault Indication and Protection Functions

WARRANTY (Standby Gensets Only)
- 2 Year Extended Limited Warranty
- 5 Year Extended Limited Warranty
- 7 Year Extended Limited Warranty
- 10 Year Extended Limited Warranty

ENGINEERED OPTIONS

ENGINE SYSTEM
- Coolant Heater Ball Valves
- Fluid Containment Pan

CONTROL SYSTEM
- Battery Disconnect Switch

GENERATOR SET
- Special Testing
- Battery Box

ENCLOSURE
- Motorized Dampers
- Enclosure Ambient Heaters
- Up to 200 MPH Wind Load Rating*

SG130 | 9.0 L | 130 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency

APPLICATION AND ENGINEERING DATA

ENGINE SPECIFICATIONS

General

Make	Generac
Cylinder #	8
Type	V
Displacement - in³ (L)	540 (8.9)
Bore - in (mm)	4.49 (114.3)
Stroke - in (mm)	4.25 (107.95)
Compression Ratio	10.5:1
Intake Air Method	Turbocharged/Aftercooled
Number of Main Bearings	5
Connecting Rods	Forged
Cylinder Head	Cast Iron
Cylinder Liners	No
Ignition	High Energy
Piston Type	Aluminum Alloy
Crankshaft Type	Forged Steel
Lifter Type	Hydraulic Roller
Intake Valve Material	Steel Alloy
Exhaust Valve Material	Stainless Steel
Hardened Valve Seats	Yes

Engine Governing

Governor	Electronic
Frequency Regulation (Steady State)	±0.25%

Lubrication System

Oil Pump Type	Gear Driven
Oil Filter Type	Full-Flow Spin-On Cartridge
Crankcase Capacity: qt (L)	8.0 (8.5)

Cooling System

Cooling System Type	Pressurized Closed
Water Pump Flow - gal/min (l/min)	26
Fan Type	Pusher
Fan Speed (RPM)	2,330
Fan Diameter - in (mm)	22 (558)

Fuel System

Fuel Type	Natural Gas, Propane Vapor/ Liquid
Carburetor	Down Draft
Secondary Fuel Regulator	Standard
Fuel Shut Off Solenoid	Standard (Dual)
Operating Fuel Pressure (NG/LPV)	7"-11" H_2O
Optional Operating Fuel Pressure (LPL)	30 - 312 psi

*When designing the external fuel system, assume a 20% safety factor to the upper and lower limit of the specified fuel pressure range to account for site variation and measurement at the generator test port. Refer to Generac 10000046207, latest rev, for proper gas supply guidelines (Contact Factory for Details).

Engine Electrical System

System Voltage	12 VDC
Battery Charger Alternator	Standard
Battery Size	See Battery Index 0161970SBY
Battery Voltage	12 VDC
Ground Polarity	Negative

ALTERNATOR SPECIFICATIONS

Standard Model	Generac 520
Poles	4
Field Type	Revolving
Insulation Class - Rotor	H
Insulation Class - Stator	H
Total Harmonic Distortion	<5%
Telephone Interference Factor (TIF)	<50

Standard Excitation	Brushless
Bearings	Single Sealed
Coupling	Direct via Flexible Disc
Prototype Short Circuit Test	Yes
Voltage Regulator Type	Full Digital
Number of Sensed Phases	3
Regulation Accuracy (Steady State)	±0.25%

SG130 | 9.0 L | 130 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency

OPERATING DATA

POWER RATINGS

	Natural Gas		Propane or Dual Fuel (NG + LP)	
Single-Phase 120/240 VAC @1.0pf	130 kW	Amps: 542	130 kW	Amps: 542
Three-Phase 120/208 VAC @0.8pf	130 kW	Amps: 451	130 kW	Amps: 451
Three-Phase 120/240 VAC @0.8pf	130 kW	Amps: 391	130 kW	Amps: 391
Three-Phase 277/480 VAC @0.8pf	130 kW	Amps: 195	130 kW	Amps: 195
Three-Phase 346/600 VAC @0.8pf	130 kW	Amps: 156	130 kW	Amps: 156

STARTING CAPABILITIES (skVA)

skVA vs. Voltage Dip

120/240 VAC 1Ø	30%	277/480 VAC 3Ø	30%	208/240 VAC 3Ø	30%
A0130044N21	105	K0130124Y21	327	K0130124Y21	327
A0150044N21	260	K0150124Y21	326	K0150124Y21	244
A0200044N21	459	K0200124Y21	478	K0200124Y21	361

FUEL CONSUMPTION RATES*

Natural Gas – ft³/hr (m³/hr)		Propane Vapor – ft³/hr (m³/hr)		Propane Liquid – gal/hr	
Percent Load	Standby	Percent Load	Standby	Percent Load	Standby
25%	378 (10.7)	25%	204.2 (5.8)	25%	5.70
50%	791.2 (22.4)	50%	341.8 (9.7)	50%	9.54
75%	1,144.5 (32.4)	75%	470.0 (13.3)	75%	13.12
100%	1,496.0 (42.4)	100%	593.7 (16.8)	100%	16.57

*1.5X maximum site rated fuel consumption should be used for gas supply design practices. Refer to Generac 10000046207, latest rev., for more information or contact factory for details.

COOLING

		Standby
Air Flow (inlet air combustion and radiator)	ft³/hr (m³/hr)	5,757 (163.0)
Coolant Flow per Minute	gal/min (L/min)	26 (98)
Coolant System Capacity	gal (L)	6.0 (22.7)
Heat Rejection to Coolant	BTU/hr	302,400
Maximum Radiator Backpressure	in H_2O (kPa)	0.5 (0.12)

COMBUSTION AIR REQUIREMENTS

	Standby
Flow at Rated Power cfm — (m³/min)	349 (9.9)

ENGINE

		Standby
Rated Engine Speed	RPM	1,800
Horsepower at Rated kW**	hp	200
Piston Speed	ft/min	1,275
BMEP	psi	162

** Refer to “Emissions Data Sheet” for maximum bHP for EPA and SCAQMD permitting purposes.

EXHAUST

		Standby
Exhaust Flow (Rated Output)	cfm (m³/min)	1,341 (38.0)
Maximum Exhaust Backpressure	inHG (kPa)	0.75 (2.54)
Exhaust Temp (Rated Output - Post Silencer)	°F (°C)	1,112 (600)
Exhaust Size Outlet	in (mm)	3.0" ID Flex (No Silencer)

Deration – Operational characteristics consider maximum ambient conditions. Derate factors may apply under atypical site conditions.
Please contact a Generac Power Systems Industrial Dealer for additional details. All performance ratings in accordance with BS5514 and DIN6271 standards.

Standby - See Bulletin 0187500SSBCom
Prime - See Bulletin 0187510SSB

STATEMENT OF EXHAUST EMISSIONS
2016 SPARK-IGNITED, NON-SCAQMD

	Model	Engine	EPA Engine Family	Fuel	CAT Req'd*	Comb Cat or Separate Cat	EPA Cert #	Grams/bhp-hr.			Rated RPM	BHP	Fuel Flow (lb/hr)
								THC	NOx	CO			
Small Spark Ignited Engines - SSIE (SORE)	QTA25	2.4	GGNXB02.42NN	NG	No	NR	GGNXB02.42NN-005	2.14	2.37	93.95	1800	38.39	16.52
	QTA25	2.4	GGNXB02.42NL	LPG	No	NR	GGNXB02.42NL-006	1.43	4.38	86.18	1800	43.29	17.59
	SG035	5.4	GGNXB05.42NN	NG	No	NR	GGNXB05.42NN-049	1.60	2.52	95.32	1800	82.10	36.91
	SG035	5.4	GGNXB05.42NL	LPG	No	NR	GGNXB05.42NL-048	1.24	3.45	112.01	1800	82.30	34.60
	SG040	5.4	GGNXB05.42NN	NG	No	NR	GGNXB05.42NN-049	1.60	2.52	95.32	1800	82.10	36.91
	SG040	5.4	GGNXB05.42NL	LPG	No	NR	GGNXB05.42NL-048	1.24	3.45	112.01	1800	82.30	34.60
	SG045	5.4	GGNXB05.42NN	NG	No	NR	GGNXB05.42NN-049	1.60	2.52	95.32	1800	82.10	36.91
	SG045	5.4	GGNXB05.42NL	LPG	No	NR	GGNXB05.42NL-048	1.24	3.45	112.01	1800	82.30	34.60
	SG050	5.4	GGNXB05.42NN	NG	No	NR	GGNXB05.42NN-049	1.60	2.52	95.32	1800	82.10	36.91
	SG050	5.4	GGNXB05.42NL	LPG	No	NR	GGNXB05.42NL-048	1.24	3.45	112.01	1800	82.30	34.60
	SG050	6.8	GGNXB06.82NN	NG	No	NR	GGNXB06.82NN-009	1.46	6.57	30.88	1800	84.90	37.17
	SG050	6.8	GGNXB06.82NL	LPG	No	NR	GGNXB06.82NL-010	1.86	2.67	172.30	1800	84.66	46.55
	SG060	6.8	GGNXB06.82NN	NG	No	NR	GGNXB06.82NN-009	1.47	2.94	75.88	1800	96.67	38.76
	SG060	6.8	GGNXB06.82NL	LPG	No	NR	GGNXB06.82NL-010	1.26	4.23	99.05	1800	96.60	41.20
	SG070	6.8	GGNXB06.82NN	NG	No	NR	GGNXB06.82NN-009	1.46	3.55	68.40	1800	109.72	42.37
	SG070	6.8	GGNXB06.82NL	LPG	No	NR	GGNXB06.82NL-010	1.26	3.28	111.49	1800	118.41	51.86
	SG080	8.0	GGNXB08.02NN	NG	No	NR	GGNXB08.02NN-011	1.16	2.86	49.60	1800	127.61	44.02
	SG080 (DF)	8.0	GGNXB08.02NN	NG/LPV	No	NR	GGNXB08.02NN-011	0.85	4.24	27.29	1800	128.06	42.50
	SG080 (DF)	8.0	GGNXB08.02NN	NG/LPL	No	NR	GGNXB08.02NN-011	1.23	4.09	37.06	1800	127.90	42.60
	SG080	8.0	GGNXB08.02NL	LPV	No	NR	GGNXB08.02NL-012	0.95	2.24	86.43	1800	127.46	50.13
	SG080	8.0	GGNXB08.02NL	LPL	No	NR	GGNXB08.02NL-012	1.00	2.77	71.36	1800	128.09	46.61
Large Spark Ignited Engines (LSIE)	SG100	9.0	GGNXB08.92C1	NG	Yes	Cat Muff	GGNXB08.92C1-047	0.17	0.003	0.06	1800	148.90	46.86
	SG100 (DF)	9.0	GGNXB08.92C1	NG/LPV	Yes	Cat Muff	GGNXB08.92C1-047	0.30	0.400	0.79	1800	133.16	45.36
	SG100 (DF)	9.0	GGNXB08.92C1	NG/LPL	Yes	Cat Muff	GGNXB08.92C1-047	0.34	0.006	1.10	1800	135.75	45.47
	SG100	9.0	GGNXB08.92C2	LPG	Yes	Cat Muff	GGNXB08.92C2-029	0.03	0.08	0.13	1800	157.67	53.08
	SG100	9.0	GGNXB08.92C2	LPL	Yes	Cat Muff	GGNXB08.92C2-029	0.07	0.04	0.30	1800	156.15	54.47
	SG130,150	9.0	GGNXB08.92C3	NG	Yes	Cat Muff	GGNXB08.92C3-050	0.10	0.03	0.02	1800	230.30	71.97
	SG130,150 (DF)	9.0	GGNXB08.92C3	NG/LPV	Yes	Cat Muff	GGNXB08.92C3-050	0.10	0.03	0.02	1800	230.30	71.97
	SG130,150 (DF)	9.0	GGNXB08.92C3	NG/LPL	Yes	Cat Muff	GGNXB08.92C3-050	0.10	0.03	0.02	1800	230.30	71.97
	MG130,150	9.0	GGNXB08.92C3	NG	Yes	Cat Muff	GGNXB08.92C3-050	0.10	0.03	0.02	1800	230.30	71.97
	MG130,150 (DF)	9.0	GGNXB08.92C3	NG/LPV	Yes	Cat Muff	GGNXB08.92C3-050	0.10	0.03	0.02	1800	230.30	71.97
	MG130,150 (DF)	9.0	GGNXB08.92C3	NG/LPL	Yes	Cat Muff	GGNXB08.92C3-050	0.10	0.03	0.02	1800	230.30	71.97
	SG130, 150	9.0	GGNXB08.92C4	LPG	Yes	Cat Muff	GGNXB08.92C4-030	0.02	0.57	1.30	1800	230.30	75.43
	SG130, 150	9.0	GGNXB08.92C4	LPL	Yes	Cat Muff	GGNXB08.92C4-030	0.02	0.57	1.30	1800	230.30	75.43
	MG130,150	9.0	GGNXB08.92C4	LPG	Yes	Cat Muff	GGNXB08.92C4-030	0.02	0.57	1.30	1800	230.30	75.43
	MG130,150	9.0	GGNXB08.92C4	LPL	Yes	Cat Muff	GGNXB08.92C4-030	0.02	0.57	1.30	1800	230.30	75.43
	SG150	12.9	GGNXB12.92C2	NG	Yes	Cat Muff	GGNXB12.92C2-031	0.53	0.13	0.53	1800	307.87	107.99
	MG150	12.9	GGNXB12.92C2	NG	Yes	Cat Muff	GGNXB12.92C2-031	0.53	0.13	0.53	1800	307.87	107.99
	SG175	12.9	GGNXB12.92C2	NG	Yes	Cat Muff	GGNXB12.92C2-031	0.53	0.13	0.53	1800	307.87	107.99
	SG200	12.9	GGNXB12.92C2	NG	Yes	Cat Muff	GGNXB12.92C2-031	0.53	0.13	0.53	1800	307.87	107.99
	MG200	12.9	GGNXB12.92C2	NG	Yes	Cat Muff	GGNXB12.92C2-031	0.53	0.13	0.53	1800	307.87	107.99
	SG230	12.9	GGNXB12.92C2	NG	Yes	Cat Muff	GGNXB12.92C2-031	0.38	0.03	0.53	1800	379.10	125.30
	SG250	12.9	GGNXB12.92C2	NG	Yes	Cat Muff	GGNXB12.92C2-031	0.38	0.03	0.53	1800	379.10	125.30
	MG250	12.9	GGNXB12.92C2	NG	Yes	Cat Muff	GGNXB12.92C2-031	0.38	0.03	0.53	1800	379.10	125.30
	SG275	12.9	GGNXB12.92C3	NG	Yes	Cat Muff	GGNXB12.92C3-032	0.06	0.06	0.81	2150	477.00	164.20
	SG300	12.9	GGNXB12.92C3	NG	Yes	Cat Muff	GGNXB12.92C3-032	0.06	0.06	0.81	2150	477.00	164.20
	MG300	12.9	GGNXB12.92C3	NG	Yes	Cat Muff	GGNXB12.92C3-032	0.06	0.06	0.81	2150	477.00	164.20
	SG150, 175, 200	14.2	GGNXB14.22C1	NG	Yes	Cat Muff	GGNXB14.22C1-033	0.06	0.05	0.39	1800	304.00	98.54
	MG150	14.2	GGNXB14.22C1	NG	Yes	Cat Muff	GGNXB14.22C1-033	0.06	0.05	0.39	1800	304.00	98.54
	MG200	14.2	GGNXB14.22C1	NG	Yes	Cat Muff	GGNXB14.22C1-033	0.06	0.05	0.39	1800	304.00	98.54
	SG230, 250	14.2	GGNXB14.22C1	NG	Yes	Cat Muff	GGNXB14.22C1-033	0.04	0.02	0.23	1800	374.00	120.84
	MG250	14.2	GGNXB14.22C1	NG	Yes	Cat Muff	GGNXB14.22C1-033	0.04	0.02	0.23	1800	374.00	120.84
	SG275, 300	14.2	GGNXB14.22C1	NG	Yes	Cat Muff	GGNXB14.22C1-033	0.03	0.03	0.17	1800	460.00	142.87
	MG300	14.2	GGNXB14.22C1	NG	Yes	Cat Muff	GGNXB14.22C1-033	0.03	0.03	0.17	1800	460.00	142.87
	SG350	21.9	GGNXB21.92C1	NG	Yes	Cat Muff	GGNXB21.92C1-034	0.18	0.14	0.82	1800	636.00	201.17
	MG350	21.9	GGNXB21.92C1	NG	Yes	Cat Muff	GGNXB21.92C1-034	0.18	0.14	0.82	1800	636.00	201.17
	SG400	21.9	GGNXB21.92C1	NG	Yes	Cat Muff	GGNXB21.92C1-034	0.18	0.14	0.82	1800	636.00	201.17
	MG400	21.9	GGNXB21.92C1	NG	Yes	Cat Muff	GGNXB21.92C1-034	0.18	0.14	0.82	1800	636.00	201.17
	SG500	25.8	GGNXB25.82C1	NG	Yes	Cat Muff	GGNXB25.82C1-057	0.07	0.07	0.05	1800	777.00	244.49
	MG500	25.8	GGNXB25.82C1	NG	Yes	Cat Muff	GGNXB25.82C1-057	0.07	0.07	0.05	1800	777.00	244.49

* Three-Way Catalyst (TWC)
NR: Not Required
DF: Dual Fuel
Refer to page 2 for definitions and advisory notes.

STATEMENT OF EXHAUST EMISSIONS
2016 SPARK-IGNITED, NON-SCAQMD

2016 EPA SPARK-IGNITED EXHAUST EMISSIONS DATA

Effective since 2009, the EPA has implemented exhaust emissions regulations on stationary spark-ignited (gaseous) engine generators for emergency applications. All Generac spark-ignited gensets, including SG, MG, QTA, QT and RG series gensets that are built with engines manufactured in 2009 and later meet the requirements of 40CFR part 60 subpart JJJJ and are EPA certified. These generator sets are labeled as EPA Certified with decals affixed to the engines' valve covers.

The attached documents summarize the general information relevant to EPA certification on these generator sets. This information can be used for submittal data and for permitting purposes, if required. These documents include the following information:

EPA Engine Family
The EPA Engine Family is assigned by the Manufacturer under EPA guidelines for certification purposes and appears on the EPA certificate.

Catalyst Required
Indicates whether a three-way catalyst (TWC) and Air/Fuel Ratio control system are required on the generator set to meet EPA certification requirements. Generally, units rated 80kW and smaller do not require a TWC to meet EPA certification requirements. Please note that some units that do not require a TWC to meet EPA requirements do need one if the California SCAQMD option is selected. Please see "California SCAQMD" below for additional information on this option.

Combination Catalyst or Separate Catalyst
SG and MG series generator sets typically utilize a single combination catalyst/silencer as part of meeting EPA certification requirements. Many QT and RG series generator sets use the same engines as SG series units, but have different exhaust configurations that require the use of conventional silencers with additional separate catalysts installed.

EPA Certificate Number
Upon certification by the EPA, a Certificate Number is assigned by the EPA.

Emissions Actuals - Grams/bhp-hr
Actual exhaust emission data for Total Hydrocarbons (THC), Nitrogen Oxides (NOx) and Carbon Monoxide (CO) that were submitted to EPA and are official data of record for certification. This data can be used for permitting if necessary. Values are expressed in grams per brake horsepower-hour; to convert to grams/kW-hr, multiply by 1.341. Please see advisory notes below for further information.

California Units, SCAQMD CEP Number
A separate low-emissions option is available on many Generac gaseous-fueled generator sets to comply with the more stringent South Coast Air Quality Management District requirements that are recognized in certain areas in California. Gensets that include this option are also EPA Certified.

General Advisory Note to Dealers
The information provided here is proprietary to Generac and its' authorized dealers. This information may only be disseminated upon request, to regulatory governmental bodies for emissions permitting purposes or to specifying organizations as submittal data when expressly required by project specifications, and shall remain confidential and not open to public viewing. This information is not intended for compilation or sales purposes and may not be used as such, nor may it be reproduced without the expressed written permission of Generac Power Systems, Inc.

Advisory Notes on Emissions Actuals
- The stated values are actual exhaust emission test measurements obtained from units representative of the generator types and engines described.
- Values are official data of record as submitted to the EPA and SCAQMD for certification purposes. Testing was conducted in accordance with prevailing EPA protocols, which are typically accepted by SCAQMD and other regional authorities.
- No emission values provided are to be construed as guarantees of emissions levels for any given Generac generator unit.
- Generac Power Systems reserves the right to revise this information without prior notice.
- Consult state and local regulatory agencies for specific permitting requirements.
- The emissions performance data supplied by the equipment manufacturer is only one element required toward completion of the permitting and installation process. State and local regulations may vary on a case-by-case basis and must be consulted by the permit applicant/equipment owner prior to equipment purchase or installation. The data supplied herein by Generac Power Systems cannot be construed as a guarantee of installability of the generator set.
- The emission values provided are the result of multi-mode, weighted scale testing in accordance with EPA testing regulations, and may not be representative of any specific load point.
- The emission values provided are not to be construed as emission limits.

Generac Power Systems, Inc. | P.O. Box 8 | Waukesha, WI 53187
P: (262) 544-4811
Bulletin 10000000890
Rev. C 06/20/16

EG 64 Keith Hall

Specification sheet

Spark-ignited generator set

20-40 kW Standby

EPA emissions

Description

Cummins® generator sets are fully integrated power generation systems providing optimum performance, reliability and versatility for stationary Standby applications.

Features

Gas engine - Rugged 4-cycle Cummins QSJ2.4 spark-ignited engine delivers reliable power. The electronic air/fuel ratio control provides optimum engine performance and fast response to load changes.

Alternator - Several alternator sizes offer selectable motor starting capability with low reactance 2/3 pitch windings, low waveform distortion with non-linear loads and fault clearing short-circuit capability.

Control system - The PowerCommand® 1.1 electronic control is standard equipment and provides total generator set system integration including automatic remote starting/stopping, precise frequency and voltage regulation, alarm and status message display, output metering, auto-shutdown at fault detection and NFPA 110 Level 1 compliance.

Cooling system - Standard cooling package provides reliable running at up to 50° C (122° F) ambient temperature.

Enclosures - The aesthetically appealing enclosure incorporates special designs that deliver one of the quietest generators of its kind. Aluminium material plus durable powder coat paint provides the best anti-corrosion performance. The generator set enclosure has been evaluated to withstand 180 MPH wind loads in accordance with ASCE7-10. The intelligent design has removable panels and service doors to provide easy access for service and maintenance.

NFPA - The generator set accepts full rated load in a single step in accordance with NFPA 110 for Level 1 systems.

Warranty and service - Backed by a comprehensive warranty and worldwide distributor network.

	Natural gas		Propane		
	Standby 60 Hz		Standby 60 Hz		Data sheets
Model	**kW**	**kVA**	**kW**	**kVA**	**60 Hz**
C20 N6	20	25	20	25	NAD-5693-EN
C25 N6	25	31	25	31	NAD-5695-EN
C30 N6	30	38	30	38	NAD-5696-EN
C36 N6	36	45	36	45	NAD-5697-EN
C40 N6	40	50	40	50	NAD-5698-EN

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Generator set specifications

Governor regulation class	ISO8528 Part 1 Class G3*
Voltage regulation, no load to full load	± 1.0%
Random voltage variation	± 1.0%
Frequency regulation	Isochronous
Random frequency variation	± 0.25% @ 60 Hz
Radio frequency emissions compliance	Meets requirements of most industrial and commercial applications

* C36 N6 and C40 N6 are Class G2

Engine specifications

Design	Naturally aspirated or turbocharged (varies by generator set model)
Bore	86.5 mm (3.4 in.)
Stroke	100.0 mm (3.94 in.)
Displacement	2.4 L (143.5 in^3)
Cylinder block	Cast iron, in-line 4 cylinder
Battery capacity	550 amps at ambient temperature of 0° F to 32° F (-18° C to 0° C)
Battery charging alternator	50 amps
Starting voltage	12 volt, negative ground
Lube oil filter type(s)	Spin-on with relief valve
Standard cooling system	50° C (122° F) ambient cooling system
Rated speed	1800 rpm

Alternator specifications

Design	Brushless, 4 pole, drip proof, revolving field
Stator	2/3 pitch
Rotor	Direct coupled, flexible disc
Insulation system	Class H per NEMA MG1-1.65
Standard temperature rise	120º C (248° F) Standby
Exciter type	Torque match (shunt) with EBS as option
Alternator cooling	Direct drive centrifugal blower
AC waveform Total Harmonic Distortion (THDV)	< 5% no load to full linear load, < 3% for any single harmonic
Telephone Influence Factor (TIF)	< 50 per NEMA MG1-22.43
Telephone Harmonic Factor (THF)	< 3%

Available voltages

1-phanse	3-phase			
• 120/240	• 120/208	• 120/240 delta	• 277/480	• 347/600

Generator set options

Fuel system
- Single fuel - natural gas or propane vapor, field selectable
- Dual fuel – natural gas and propane vapor auto changeover
- Low fuel gas pressure warning

Engine
- Engine air cleaner – normal or heavy duty
- Shut down – low oil pressure
- Extension – oil drain

Alternator
- 120° C (248° F) temperature rise alternator
- 105° C (221° F) temperature rise alternator
- Excitation Boost System (EBS)
- PMG available on 36 kW and 40 kW
- Alternator heater, 120 V

Control
- AC output analog meters (bargraph)
- Stop switch – emergency
- Auxiliary output relays (2)
- Auxiliary configurable signal inputs (8) and relay outputs (8)

Electrical
- Single circuit breaker
- Dual circuit breakers
- 80% rated circuit breakers
- 100% rated circuit breakers

Enclosure
- Aluminium enclosure Sound Level 1 or Level 2, with muffler installed, sandstone or green color
- Open set

Cooling system
- Shutdown – low coolant level
- Warning – low coolant level
- Extension – coolant drain
- Cold weather options:
  - < 4° C (40° F) – cold weather
  - < -17° C (0° F) – extreme cold weather

Exhaust system
- Exhaust connector NPT

Generator set application
- Base barrier – elevated generator set
- Battery rack, larger battery
- Radiator outlet duct adapter

Generator set options (continued)

Warranty

- Base warranty – 2 year, 1000 hour, Standby
- Standby, 3 year, 1500 hour, parts
- Standby, 5 year, 2500 hour, parts
- Standby, 3 year, 1500 hour, parts and labor
- Standby, 5 year, 2500 hour, parts and labor
- Standby, 3 year, 1500 hour, parts, labor and travel
- Standby, 5 year, 2500 hour, parts, labor and travel

Note: Some options may not be available on all models - consult factory for availability.

Generator set accessories

- Extreme cold weather kit
- Battery rack, larger battery
- Battery heater kit
- HMI211RS in-home display, including pre-configured 12-inch harness
- HMI211 remote display, including pre-configured 12-inch harness
- HMI220 remote display
- Auxiliary output relays (2)
- Auxiliary configurable signal inputs (8) and relay outputs (8)
- Annunciator – RS485
- Remote monitoring device – PowerCommand 500
- Battery charger – stand-alone, 12 V
- Circuit breakers
- Enclosure Sound Level 1 to Sound Level 2 upgrade kit
- Enclosure paint touch up kit
- Base barrier – elevated generator set
- Mufflers – industrial, residential or critical
- Alternator Excitation Boost System (EBS)
- PMG available on 36 kW and 40 kW
- Alternator heater
- Maintenance and service kit
- Engine lift kit

Control system PowerCommand 1.1

PowerCommand control is an integrated generator set control system providing voltage regulation, engine protection, operator interface and isochronous governing (optional). Major features include:

- Battery monitoring and testing features and smart starting control system.
- Standard PCCNet interface to devices such as remote annunciator for NFPA 110 applications.
- Control boards potted for environmental protection.
- Control suitable for operation in ambient temperatures from -40 ℃ to +70 ℃ (-40 ℉ to +158 ℉) and altitudes to 5000 meters (13,000 feet).
- Prototype tested; UL, CSA, and CE compliant.
- InPower™ PC-based service tool available for detailed diagnostics.

Operator/display panel

- Manual off switch
- Alpha-numeric display with pushbutton access for viewing engine and alternator data and providing setup, controls and adjustments (English or international symbols)
- LED lamps indicating generator set running, not in auto, common warning, common shutdown, manual run mode and remote start
- Suitable for operation in ambient temperatures from -40 ℃ to +70 ℃
- Bargraph display (optional)

AC protection

- Over current warning and shutdown
- Over and under voltage shutdown
- Over and under frequency shutdown
- Over excitation (loss of sensing) fault
- Field overload

Engine protection

- Overspeed shutdown
- Low oil pressure warning and shutdown
- High coolant temperature warning and shutdown
- Low coolant level warning or shutdown
- Low coolant temperature warning
- High, low and weak battery voltage warning
- Fail to start (overcrank) shutdown
- Fail to crank shutdown
- Redundant start disconnect
- Cranking lockout
- Sensor failure indication
- Low fuel level warning or shutdown

Alternator data

- Line-to-Line and Line-to-Neutral AC volts
- 3-phase AC current
- Frequency
- Total kVa

Engine data

- DC voltage
- Lube oil pressure
- Coolant temperature
- Engine speed

Other data

- Generator set model data
- Start attempts, starts, running hours
- Fault history
- RS485 Modbus® interface
- Data logging and fault simulation (requires InPower service tool)

Digital governing (optional)

- Integrated digital electronic isochronous governor
- Temperature dynamic governing

Digital voltage regulation

- Integrated digital electronic voltage regulator
- 2-phase Line-to-Line sensing
- Configurable torque matching

Control functions

- Time delay start and cooldown
- Cycle cranking
- PCCNet interface
- (2) Configurable inputs
- (2) Configurable outputs
- Remote emergency stop
- Automatic Transfer Switch (ATS) control
- Generator set exercise, field adjustable

Options

- Auxiliary output relays (2)
- Remote annunciator with (3) configurable inputs and (4) configurable outputs
- PMG alternator excitation available on 36 kW and 40 kW
- PowerCommand 500/550 for remote monitoring and alarm notification (accessory)
- Auxiliary, configurable signal inputs (8) and configurable relay outputs (8)
- Digital governing
- AC output analog meters (bargraph)
  - Color-coded graphical display of:
    - 3-phase AC voltage
    - 3-phase current
    - Frequency
    - kVa
- Remote operator panel

Ratings definitions

Emergency Standby Power (ESP):

Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel Stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Limited-Time Running Power (LTP):

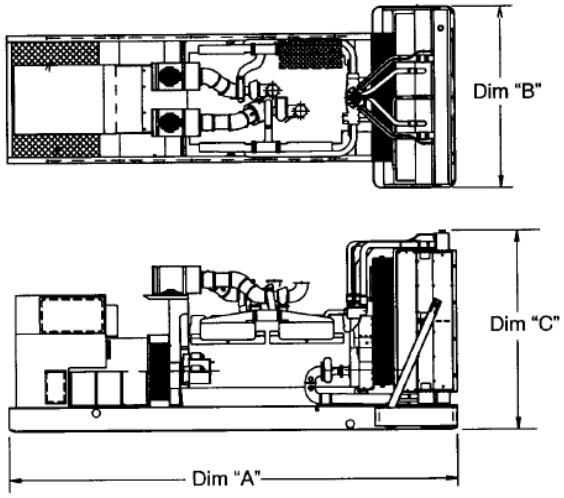
Applicable for supplying power to a constant electrical load for limited hours. Limited-Time Running Power (LTP) is in accordance with ISO 8528.

Prime Power (PRP):

Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Base Load (Continuous) Power (COP):

Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) in accordance with ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS 5514.



This outline drawing is for reference only. See respective model data sheet for specific model outline drawing number.

Do not use for installation design

Model	Dim "A" mm (in.)	Dim "B" mm (in.)	Dim "C" mm (in.)	Set weight* dry kg (lbs)	Set weight* wet kg (lbs)
Open set					
C20 N6	1669 (65.7)	864 (34)	1123 (44.2)	423 (933)	440 (969)
C25 N6	1669 (65.7)	864 (34)	1123 (44.2)	441 (972)	457 (1008)
C30 N6	2225 (87.6)	864 (34)	1123 (44.2)	491 (1083)	508 (1119)
C36 N6	2225 (87.6)	864 (34)	1123 (44.2)	520 (1146)	536 (1182)
C40 N6	2225 (87.6)	864 (34)	1123 (44.2)	548 (1208)	564 (1244)
Sound attenuated enclosure Level 1					
C20 N6	1829 (72)	864 (34)	1156 (45.5)	469 (1034)	485 (1070)
C25 N6	1829 (72)	864 (34)	1156 (45.5)	487 (1073)	503 (1109)
C30 N6	2388 (94)	864 (34)	1156 (45.5)	542 (1195)	558 (1231)
C36 N6	2388 (94)	864 (34)	1156 (45.5)	571 (1258)	587 (1294)
C40 N6	2388 (94)	864 (34)	1156 (45.5)	599 (1320)	615 (1356)
Sound attenuated enclosure Level 2					
C20 N6	2073 (81.6)	864 (34)	1156 (45.5)	474 (1045)	490 (1081)
C25 N6	2073 (81.6)	864 (34)	1156 (45.5)	492 (1084)	508 (1120)
C30 N6	2626 (103.4)	864 (34)	1156 (45.5)	547 (1206)	563 (1242)
C36 N6	2626 (103.4)	864 (34)	1156 (45.5)	576 (1269)	592 (1305)
C40 N6	2626 (103.4)	864 (34)	1156 (45.5)	604 (1331)	620 (1367)

* Weights based on 1-phase generator set. Weights may vary with a different configuration.

Codes and standards

Codes or standards compliance may not be available with all model configurations – consult factory for availability.

	This generator set is designed in facilities certified to ISO 9001 and manufactured in facilities certified to ISO 9001 or ISO 9002.		The generator set is available Listed to UL 2200, Stationary Engine Generator Assemblies.
	The Prototype Test Support (PTS) program verifies the performance integrity of the generator set design. Cummins products bearing the PTS symbol meet the prototype test requirements of NFPA 110 for Level 1 systems.	**U.S. EPA**	Engine certified to U.S. EPA SI Stationary Emission Regulation 40 CFR, Part 60.
	All low voltage models are CSA certified to product class 4215-01.	**International Building Code**	The generator set is certified to International Building Code (IBC) 2012.

Warning: Back feed to a utility system can cause electrocution and/or property damage. Do not connect to any building's electrical system except through an approved device or after building main switch is open.

For more information contact your local Cummins distributor or visit power.cummins.com

Our energy working for you.™

NAS-5692-EN.DOCX (04/19) A052F982

Generator set data sheet

Model:	**C25 N6**
kW rating:	**25.0 natural gas Standby**
	25.0 propane Standby
Frequency:	**60 Hz**
Fuel type:	**Natural gas/propane**
Emissions level:	**EPA emissions**

Fuel consumption

	Natural gas				Propane			
	Standby				Standby			
	kW (kVA)				kW (kVA)			
Ratings	25.0 (31.3)				25.0 (31.3)			
Load	**1/4**	**1/2**	**3/4**	**Full**	**1/4**	**1/2**	**3/4**	**Full**
scfh	123.8	185.7	247.6	309.5	51.6	75.6	99.6	125.4
m^3/hr	3.51	5.26	7.01	8.77	1.46	2.14	2.82	3.55

Engine

	Natural gas	Propane
	Standby rating	Standby rating
Engine model	QSJ2.4	
Configuration	Cast iron, in-line 4 cylinder	
Aspiration	Naturally aspirated	
Gross engine power output, kW_m (bhp)	30 (40)	32 (43.5)
Bore, mm (in.)	86.5 (3.41)	
Stroke, mm (in.)	100.0 (3.94)	
Rated speed, rpm	1800	
Compression ratio	9.5:1	
Lube oil capacity, L (qt)	4 (4.54)	
Overspeed limit, rpm	2250	

Fuel supply pressure

Minimum operating pressure, kPa (in H_2O)	1.5 (6.0)
Maximum operating pressure, kPa (in H_2O)	3.2 (13.0)

Air	Natural gas Standby rating	Propane Standby rating
Combustion air, m^3/min (scfm)	1.5 (51.8)	1.3 (46.5)
Maximum air cleaner restriction, kPa (in H_2O)	1.24 (5.0)	
Alternator cooling air, m^3/min (scfm)	N/A	

Exhaust

Exhaust flow at rated load, m^3/min (cfm)	5.3 (188.1)	4.6 (165.3)
Exhaust temperature, °C (°F)	618 (1145)	628 (1162)
Exhaust back pressure (maximum allowable at engine), kPa (in H_2O)	5.0 (20)	5.0 (20)
Exhaust back pressure (actual with factory fitted muffler), kPa (in H_2O)	1.75 (7)	

Standard set-mounted radiator cooling

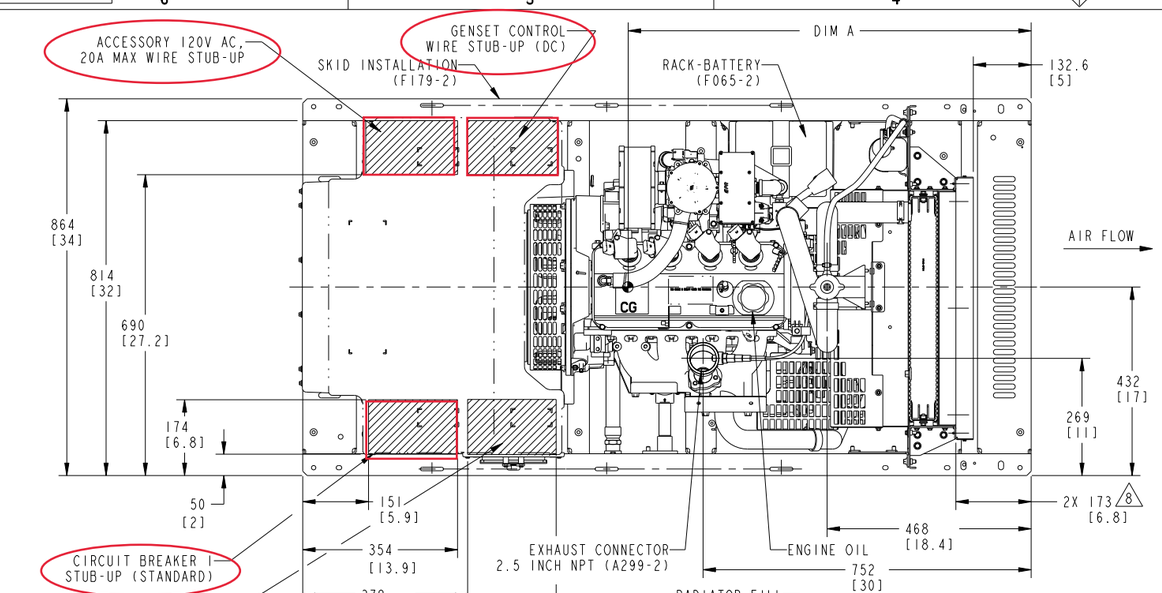
Ambient design, °C (°F)	50 (122)
Fan load, kW (HP)	0.74 (1.0)
Coolant capacity (with radiator), L (US gal)	12 (3.1)
Cooling system air flow, m^3/min (scfm)	60.2 (2150)
Maximum cooling air flow static restriction, kPa (in H_2O)	0.12 (0.5)

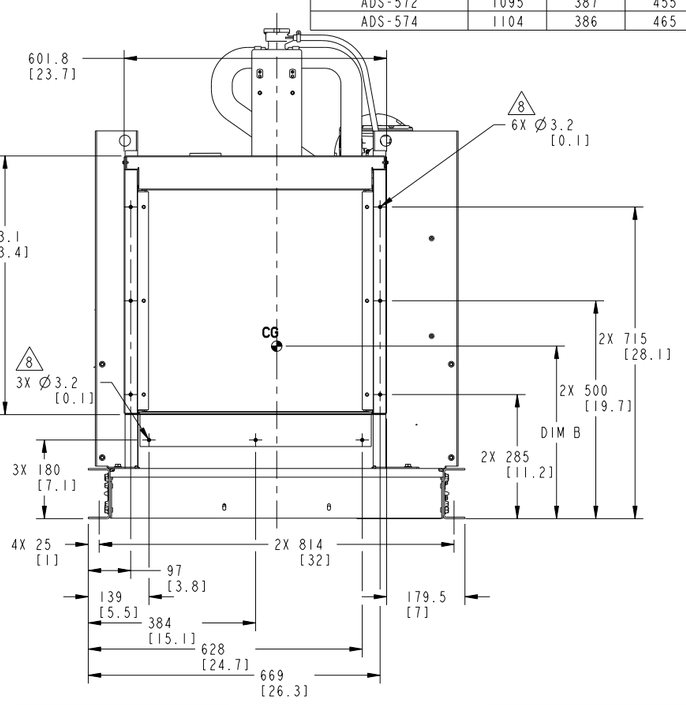
Weights[2]

Unit dry weight kgs (lbs)	483 (1067)
Unit wet weight kgs (lbs)	500 (1103)

Notes:
[1]For non-standard remote installations contact your local Cummins representative.
[2]Weights represent a set with 1-phase with sound level 1 enclosure.

PTC® Creo® Parametric





REL NO	LTR	NO	REVISION	DWN	CKD	APVD	DATE
ECO-159557	E	1	ADD 132.6 [5] ZONE D4	JPR	JB	J BUTLER	15FEB16
		2	ADD NOTE: OPTIONAL DUCT ADAPTER (F013-2) ZONE B4	JPR	JB	J BUTLER	15FEB16
		3	ADD 601.8 [23.7] ZONE C3	JPR	JB	J BUTLER	15FEB16
		4	ADD 593.1 [23.4] ZONE C3	JPR	JB	J BUTLER	15FEB16
		5	ADD 179.5 [7] ZONE A2	JPR	JB	J BUTLER	15FEB16
		6	SECURITY CLASSIFICATION PUBLIC WAS PROPRIETARY	JPR	JB	J BUTLER	15FEB16

NOTES:

1. DIMENSIONS SHOWN IN [ ] ARE IN INCHES.
2. REFER TO CIRCUIT BREAKER OUTLINE DRAWING FOR ELECTRICAL STUB-UP AREA FOR SPECIFIC BREAKERS.
3. CONTROL INTERFACE CONNECTIONS SHOULD BE MADE WITH FLEXIBLE CONNECTIONS.
4. Ø21 [0.8] HOLES MARKED BY △ FOR SECURING TO MOUNTING SURFACE.
5. OIL DRAIN EXTENSION: 3/8 INCH HOSE ID.
6. FOR IBC SEISMIC CERTIFIED INSTALLATION, SEE GENSET IBC SEISMIC INSTALLATION REQUIREMENT DRAWING.
7. DRY WEIGHT = WET WEIGHT-16 KG (35 LB).
8. Ø3.2 HOLES FOR CUSTOMER-SUPPLIED COOLING EXHAUST AIR DUCT ADAPTER.

TABULATION (APPX. VALUES)

ALT DATA SHEET #	DIM A	DIM B	GENSET WET WEIGHT KG	GENSET WET WEIGHT LB
ADS-568	866	317	430	947
ADS-569	874	390	440	969
ADS-570	873	389	440	969
ADS-571	889	387	457	1008
ADS-572	1095	387	455	1002
ADS-574	1104	386	465	1024

C20 N6, C22 N6, C25 N6
C30 N6H

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS
DIM: X ± 0, .X ± 0.0, .XX± 0.00
HOLE: 0.00- 4.99 +0.15/-0.08; 5.00- 9.99 +0.20/-0.10; 10.00-17.49 +0.25/-0.13; 17.50-24.99 +0.30/-0.13
ANG TOL: ± 0.0° SCALE: 1/6

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APVD D_GILLETT
DATE 22MAY13
FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, USE ASME Y14.5M-1994
FIRST USED ON ARROW

SITE CODE PGF

CUMMINS POWER GENERATION
OUTLINE, GENSET
DWG SIZE D | A045C211 | SHEET 1 OF 2 | DWG REV E

Drawing Name: A045C212 Revision: E
Part Name: A045C211 Revision: E
Sheet 1 of 3

2018 EPA Exhaust Emission Compliance Statement
C25 N6
Standby
60 Hz Spark Ignited Generator Set

Compliance Information:

The engine used in this generator set complies with U.S. EPA emissions regulations under the provisions of 40 CFR Part 60, Stationary Emergency Spark-Ignited emissions limits when tested on 6 mode cycle of Part 90.

Engine Manufacturer:	Cummins Inc.
EPA Certificate Number:	JCEXB02.4AAA-004
Effective Date:	8/23/2017
Date Issued:	8/23/2017
EPA Engine Family (Cummins Emissions Family):	JCEXB02.4AAA

Engine Information:

Model:	QSJ2.4	Bore:	3.41 in. (86 mm)
Engine Nameplate HP:	Natural Gas: 40	Stroke:	3.94 in. (100 mm)
	Propane: 43.5	Displacement:	146.5 cu. in. (2 liters)
Type:	4 Cycle, In-Line, 4 Cylinder	Compression Ratio:	9.5:1
Aspiration:	Naturally Aspirated		
Emission Control Device:	Electronic Air/Fuel Ratio Control and Closed-Loop Breather System		

U.S. Environmental Protection Agency Station Emergency SI Emission Limits

	Grams per BHP-hr			Grams per kW_m-hr		
Natural Gas	**NOx**	**NMHC**	**CO**	**NOx**	**NMHC**	**CO**
Test Results	4.7	0.3	39.4	6.3	0.5	52.8
EPA Emissions Limit	10.0		387	13.4		519

	Grams per BHP-hr			Grams per kWm-hr		
Propane (LP)	**NOx**	**NMHC**	**CO**	**NOx**	**NMHC**	**CO**
Test Results	5.7	0.8	51.7	7.6	1.1	69.3
EPA Emissions Limit	10.0		387	13.4		519

Tests conducted using alternate methods, instrumentation, fuel or reference conditions can yield different results.

Engine operation with excessive air intake or exhaust restriction beyond published maximum limits, or with improper maintenance, may result in elevated emission levels.

Division for Air Quality

300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007N

Source Emissions Profile

__ Section N.1: Emission Summary
__ Section N.2: Stack Information
__ Section N.3: Fugitive Information
__ Section N.4: Notes, Comments, and Explanations

Additional Documentation

___ Complete DEP7007AI

Source Name: **Eastern Kentucky University**
KY EIS (AFS) #: **21- 151-00007**
Permit #: **F-20-006 R3**
Agency Interest (AI) ID: **2820**
Date: **2/7/2025**

N.1: Emission Summary

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity *(SCC Units/hour)*	Pollutant	Uncontrolled Emission Factor *(lb/SCC Units)*	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency *(%)*	Control Efficiency *(%)*	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential *(lb/hr)*	Controlled Potential *(lb/hr)*	Uncontrolled Potential *(tons/yr)*	Controlled Potential *(tons/yr)*
EG 63	Keene Hall	N/A	130 kW NG EG	N/A	N/A	EG 63	0.0015 MMSCF/hr	See attached	See attached	AP-42 Table 3.2-3	100.00%	0.00%	See attached	See attached	See attached	See attached
EG 64	Keith Hall	N/A	25 kW NG EG	N/A	N/A	EG 64	0.00031 MMSCF/hr	See attached	See attached	AP-42 Table 3.2-3	100.00%	0.00%	See attached	See attached	See attached	See attached

Section N.2: Stack Information

UTM Zone:

Stack ID	Identify all Emission Units (with Process ID) and Control Devices that Feed to Stack	Stack Physical Data			Stack UTM Coordinates		Stack Gas Stream Data		
		Equivalent Diameter *(ft)*	Height *(ft)*	Base Elevation *(ft)*	Northing *(m)*	Easting *(m)*	Flowrate *(acfm)*	Temperature *(° F)*	Exit Velocity *(ft/sec)*
EG 63	Keene Hall	0.25	5.5	1011	4179834.95	737539.52	1341	1112	
EG 64	Keith Hall	0.2	6	1013	4179834.95	737539.52	188.1	1265	

Section N.3: Fugitive Information

UTM Zone:

Emission Unit #	Emission Unit Name	Process ID	Area Physical Data		Area UTM Coordinates		Area Release Data	
			Length of the X Side *(ft)*	Length of the Y Side *(ft)*	Northing *(m)*	Easting *(m)*	Release Temperature *(°F)*	Release Height *(ft)*

Section N.4: Notes, Comments, and Explanations

EKU AI 2820 - New Natural Gas Fired Emergency Generator - EG 63
Emission Calculations

EG 63 - Keene Hall

Power Output:	130	kW	**Fuel Use Rate:**	0.0015	MMSCF/hr
	230	hp			
Max Usage:	8,760	hr/yr	**NG Heating Value:**	1020	Btu/scf
Acutal Usage:	100	hr/yr			

Generator Engine Emission Factors			
Pollutant	**Emission Factor**		**Data Source**
CO	0.02	g/bhp-hr	Mfr Data
CO_2	1.10E+02	lb/MMBtu	AP 42, Table 3.2-3
NO_x	3.00E-02	g/bhp-hr	Mfr Data
SO_2	5.88E-04	lb/MMBtu	AP 42, Table 3.2-3
PM	9.91E-03	lb/MMBtu	AP 42, Table 3.2-3
PM_{10}	9.50E-03	lb/MMBtu	AP 42, Table 3.2-3
$PM_{2.5}$	9.50E-03	lb/MMBtu	AP 42, Table 3.2-3
VOC	1.00E-01	g/bhp-hr	Mfr Data*
Lead	N/A	N/A	N/A
Methane	2.30E-01	lb/MMBtu	AP 42, Table 3.2-3
Total HAP	1.03E-01	lb/MMBtu	AP 42, Table 3.2-3
1,1,2,2-Tetrachloroethane	2.53E-05	lb/MMBtu	AP 42, Table 3.2-3
1,1,2-Trichloroethane	1.53E-05	lb/MMBtu	AP 42, Table 3.2-3
1,3-Butadiene	6.63E-04	lb/MMBtu	AP 42, Table 3.2-3
1,3-Dichloropropene	1.27E-05	lb/MMBtu	AP 42, Table 3.2-3
Acetaldehyde	2.79E-03	lb/MMBtu	AP 42, Table 3.2-3
Acrolein	2.63E-03	lb/MMBtu	AP 42, Table 3.2-3
Benzene	1.58E-03	lb/MMBtu	AP 42, Table 3.2-3
Butyr/isobutyraldehyde	4.86E-05	lb/MMBtu	AP 42, Table 3.2-3
Carbon Tetrachloride	1.77E-05	lb/MMBtu	AP 42, Table 3.2-3
Chlorobenzene	1.29E-05	lb/MMBtu	AP 42, Table 3.2-3
Chloroform	1.37E-05	lb/MMBtu	AP 42, Table 3.2-3
Ethane	7.04E-02	lb/MMBtu	AP 42, Table 3.2-3
Ethylbenzene	2.48E-05	lb/MMBtu	AP 42, Table 3.2-3
Ethylene Dibromide	2.13E-05	lb/MMBtu	AP 42, Table 3.2-3
Formaldehyde	2.05E-02	lb/MMBtu	AP 42, Table 3.2-3
Methanol	3.06E-03	lb/MMBtu	AP 42, Table 3.2-3
Methylene Chloride	4.12E-05	lb/MMBtu	AP 42, Table 3.2-3
Naphthalene	9.71E-05	lb/MMBtu	AP 42, Table 3.2-3
PAH	1.41E-04	lb/MMBtu	AP 42, Table 3.2-3
Styrene	1.19E-05	lb/MMBtu	AP 42, Table 3.2-3
Toluene	5.58E-04	lb/MMBtu	AP 42, Table 3.2-3
Vinyl Chloride	7.18E-06	lb/MMBtu	AP 42, Table 3.2-3
Xylene	1.95E-04	lb/MMBtu	AP 42, Table 3.2-3

*Mfr supplied emissions data as THC, used as VOC factor to be conservative

Annual Emissions Calculations (EG 63)					
Pollutant	**Maximum Usage (8,760 hr/yr)**		**Regulatory Limit (100 hr/yr)**		**Pollutant**
	lb/yr	ton/yr	lb/yr	ton/yr	
CO	88.84	0.04	1.01	5.07E-04	**CO**
CO_2	1,470,376.51	735.19	16,785.12	8.39	**CO_2**
NO_x	133.26	0.07	1.52	0.00	**NO_x**
SO_2	7.86	3.93E-03	0.09	4.49E-05	**SO_2**
PM	132.47	0.07	1.51	7.56E-04	**PM**
PM_{10}	126.99	0.06	1.45	7.25E-04	**PM_{10}**
$PM_{2.5}$	126.99	0.06	1.45	7.25E-04	**$PM_{2.5}$**
VOC	444.19	2.22E-01	5.07	2.54E-03	**VOC**
Lead	N/A	N/A	N/A	N/A	**Lead**
Methane	3,074.42	1.54	35.10	1.75E-02	**Methane**
Total HAP	1,375.03	0.69	15.70	7.85E-03	**Total HAP**

EKU AI 2820 - New Natural Gas Fired Emergency Generator - EG 64
Emission Calculations

EG 64 - Keith Hall

Power Output:	25	kW	**Fuel Use Rate:**	0.00031	MMSCF/hr
	40	hp			
Max Usage:	8,760	hr/yr	**NG Heating Value:**	1020	Btu/scf
Acutal Usage:	100	hr/yr			

Generator Engine Emission Factors			
Pollutant	**Emission Factor**		**Data Source**
CO	3.94E+01	g/bhp-hr	Mfr. Data
CO_2	1.10E+02	lb/MMBtu	AP 42, Table 3.2-3
NO_x	4.70E+00	g/bhp-hr	Mfr. Data
SO_2	5.88E-04	lb/MMBtu	AP 42, Table 3.2-3
PM	9.91E-03	lb/MMBtu	AP 42, Table 3.2-3
PM_{10}	9.50E-03	lb/MMBtu	AP 42, Table 3.2-3
$PM_{2.5}$	9.50E-03	lb/MMBtu	AP 42, Table 3.2-3
VOC	3.00E-01	g/bhp-hr	Mfr. Data*
Lead	N/A	N/A	N/A
Methane	2.30E-01	lb/MMBtu	AP 42, Table 3.2-3
Total HAP	1.03E-01	lb/MMBtu	AP 42, Table 3.2-3
1,1,2,2-Tetrachloroethane	2.53E-05	lb/MMBtu	AP 42, Table 3.2-3
1,1,2-Trichloroethane	1.53E-05	lb/MMBtu	AP 42, Table 3.2-3
1,3-Butadiene	6.63E-04	lb/MMBtu	AP 42, Table 3.2-3
1,3-Dichloropropene	1.27E-05	lb/MMBtu	AP 42, Table 3.2-3
Acetaldehyde	2.79E-03	lb/MMBtu	AP 42, Table 3.2-3
Acrolein	2.63E-03	lb/MMBtu	AP 42, Table 3.2-3
Benzene	1.58E-03	lb/MMBtu	AP 42, Table 3.2-3
Butyr/isobutyraldehyde	4.86E-05	lb/MMBtu	AP 42, Table 3.2-3
Carbon Tetrachloride	1.77E-05	lb/MMBtu	AP 42, Table 3.2-3
Chlorobenzene	1.29E-05	lb/MMBtu	AP 42, Table 3.2-3
Chloroform	1.37E-05	lb/MMBtu	AP 42, Table 3.2-3
Ethane	7.04E-02	lb/MMBtu	AP 42, Table 3.2-3
Ethylbenzene	2.48E-05	lb/MMBtu	AP 42, Table 3.2-3
Ethylene Dibromide	2.13E-05	lb/MMBtu	AP 42, Table 3.2-3
Formaldehyde	2.05E-02	lb/MMBtu	AP 42, Table 3.2-3
Methanol	3.06E-03	lb/MMBtu	AP 42, Table 3.2-3
Methylene Chloride	4.12E-05	lb/MMBtu	AP 42, Table 3.2-3
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Styrene	1.19E-05	lb/MMBtu	AP 42, Table 3.2-3
Toluene	5.58E-04	lb/MMBtu	AP 42, Table 3.2-3
Vinyl Chloride	7.18E-06	lb/MMBtu	AP 42, Table 3.2-3
Xylene	1.95E-04	lb/MMBtu	AP 42, Table 3.2-3

*Mfr supplied emissions data as NMHC, used as VOC factor to be conservative

Annual Emissions Calculations (EG 64)					
Pollutant	**Maximum Usage (8,760 hr/yr)**		**Regulatory Limit (100 hr/yr)**		**Pollutant**
	lb/yr	ton/yr	lb/yr	ton/yr	
CO	30,436.65	15.22	347.45	1.74E-01	**CO**
CO_2	304,198.88	152.10	3,472.59	1.74	**CO_2**
NO_x	3,630.77	1.82	41.45	0.02	**NO_x**
SO_2	1.63	0.00	0.02	9.28E-06	**SO_2**
PM	27.41	0.01	0.31	1.56E-04	**PM**
PM_{10}	26.27	0.01	0.30	1.50E-04	**PM_{10}**
$PM_{2.5}$	26.27	0.01	0.30	1.50E-04	**$PM_{2.5}$**
VOC	231.75	0.12	2.65	1.32E-03	**VOC**
Lead	N/A	N/A	N/A	N/A	**Lead**
Methane	636.05	0.32	7.26	3.63E-03	**Methane**
Total HAP	284.47	0.14	3.25	1.62E-03	**Total HAP**

Division for Air Quality

300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007V
Applicable Requirements and Compliance Activities

___ Section V.1: Emission and Operating Limitation(s)
___ Section V.2: Monitoring Requirements
___ Section V.3: Recordkeeping Requirements
___ Section V.4: Reporting Requirements
___ Section V.5: Testing Requirements
___ Section V.6: Notes, Comments, and Explanations

Additional Documentation
___ Complete DEP7007AI

Source Name: **Eastern Kentucky University**
KY EIS (AFS) #: **21-** **151-00007**
Permit #: **F-20-006 R3**
Agency Interest (AI) ID: **2820**
Date: **2/7/2025**

Section V.1: Emission and Operating Limitation(s)

Emission Unit #	Emission Unit Description	Applicable Regulation or Requirement	Pollutant	Emission Limit (if applicable)	Voluntary Emission Limit or Exemption (if applicable)	Operating Requirement or Limitation (if applicable)	Method of Determining Compliance with the Emission and Operating Requirement(s)

See attached draft FESOP pg 17;

applicable regulations and requirements for two new ntaural gas internal combustion engine subject to 401 KAR 63:002 and 60:005.

Section V.2: Monitoring Requirements

Emission Unit #	Emission Unit Description	Pollutant	Applicable Regulation or Requirement	Parameter Monitored	Description of Monitoring

See attached draft FESOP pg 17;

applicable regulations and requirements for two new ntaural gas internal combustion engine subject to 401 KAR 63:002 and 60:005.

Section V.3: Recordkeeping Requirements

Emission Unit #	Emission Unit Description	Pollutant	Applicable Regulation or Requirement	Parameter Recorded	Description of Recordkeeping

See attached draft FESOP pg 17;

applicable regulations and requirements for two new ntaural gas internal combustion engine subject to 401 KAR 63:002 and 60:005.

Section V.4: Reporting Requirements

Emission Unit #	Emission Unit Description	Pollutant	Applicable Regulation or Requirement	Parameter Reported	Description of Reporting

See attached draft FESOP pg 17;

applicable regulations and requirements for two new ntaural gas internal combustion engine subject to 401 KAR 63:002 and 60:005.

Section V.5: Testing Requirements

Emission Unit #	Emission Unit Description	Pollutant	Applicable Regulation or Requirement	Parameter Tested	Description of Testing

See attached draft FESOP pg 17;

applicable regulations and requirements for two new ntaural gas internal combustion engine subject to 401 KAR 63:002 and 60:005.

Section V.6: Notes, Comments, and Explanations

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

EG 01-18 (EG0119) ~~**Seventeen (17)**~~**Fourteen (14)** **Existing Natural Gas Fired Emergency Generators**

Description:
Total Capacity ~~830~~ 767.5 KW
Built before July 1, 2008 or January 1, 2009 and is consider an existing institutional emergency stationary RICE located at an area source of HAP emissions that do not operate for the purpose specified in 40 CFR 63.6640(f)(4)(ii).

Emission Unit #	Output Rating		Location
	kW	hp	
EG 01	80	107.2	Telford Hall
EG 02	45	60.3	Campbell
EG 03	15	20.1	Foster
EG 04	30	40.2	Moore
EG 05	12.5	16.8	Cammack
~~EG 06~~	~~12.5~~	~~16.8~~	~~Keith~~
~~EG 07~~	~~15~~	~~20.1~~	~~Keen Johnson~~
EG 08	85	113.9	Fitzpatrick
EG 10	15	20.1	Wallace
EG 11	100	134	Rowlett
EG 12	85	113.9	Mattox
EG 13	45	60.3	Gentry
EG 14	35	46.9	Commonwealth
EG 15	100	134	Begley
~~EG 16~~	~~35~~	~~46.9~~	~~Keen~~
EG 17	45	60.3	Carter
EG 18	75	100.5	Model

APPLICABLE REGULATIONS:
401 KAR 63:020, *Potentially hazardous matter or toxic substances.*

PRECLUDED REGULATIONS:
401 KAR 63:002, Section 2(4)(eeee) 40 C.F.R. 63.6580 to 63.6675, Tables 1a to 8, and Appendix A (**Subpart ZZZZ**), *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.*

1. **Operating Limitations:**
   a. The permittee shall operate these units according to the following requirements to ensure that they meet the definition of "emergency stationary RICE" in 40 CFR 63.6675 in order to be considered emergency stationary RICE. [40 CFR 63.6585(f)(3); 63.6675; and 63.6640(f)]

   b. There is no time limit on the use of emergency stationary RICE emergency situations. [40 CFR 63.6640(f)(1)]

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

EG 48 -~~6164~~ (EG4856) ~~Thirteen~~ Sixteen (~~13~~ 16) New Natural Gas Emergency

Generators Description: (Total Capacity ~~1,318~~ 1498 KW) built after January 1, 2009

Emission Unit #	Output Rating		Location
	kW	hp	
EG 48	70	93.8	EKU Police
EG 49	25	33.5	Stratton
EG 50	36	48.3	Miller/Beckham/McCready
EG 51	60	80	Palmer Hall
EG 52	20	26.8	Burnam
EG 53	300	402	Perkins
EG 54	100	134	North Hall
EG 55	100	134	Martin
EG 56	50	67	Hanger Field
EG 58	250	347	Powell Building
EG 59	80	127	Student Wellness & Recreation
EG 60	77	103	Wallace
EG 61	150	201	Case Dining Hall
EG 62	**25**	**33.5**	**Keen Johnson**
EG 63	**130**	**230**	**Keene Hall**
EG 64	**25**	**40**	**Keith Hall**

Applicable Regulations

401 KAR 63:002, Section 2(4)(eeee) 40 C.F.R. 63.6580 to 63.6675, Tables 1a to 8, and Appendix A (**Subpart ZZZZ**), *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.*

401 KAR 60:005, Section 2(2)(eeee) 40 C.F.R. 60.4230 to 60.4248, Tables 1 to 4 (**Subpart JJJJ**), *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines.*

1. **Operating Limitations:**
   a. The permittee shall operate the emergency stationary ICE according to the requirements in 40 CFR 60.4243(d)(1) through (3). In order for the engine to be considered an emergency stationary ICE under 40 CFR 60, Subpart JJJJ, any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for 50 hours per year, as described in 40 CFR 60.4243(d)(1) through (3), is prohibited. If the permittee does not operate the engine according to the requirements in 40 CFR 60.4243(d)(1) through (3), the engine will not be considered an emergency engine under 40 CFR 60, Subpart JJJJ and shall meet all requirements for non-emergency engines. [40 CFR 60.4243(d)]
      i. There is no time limit on the use of emergency stationary ICE in emergency situations. [40 CFR 60.4243(d)(1)]

      ii. The permittee may operate the emergency stationary ICE for any combination of the purposes specified in 40 CFR 60.4243(d)(2)(i) for a maximum of 100 hours per calendar year. Any operation for non-emergency situations as allowed in 40 CFR 60.4243(d)(3) counts as part of the 100 hours per calendar year allowed in 40 CFR 60.4243(d)(2). Emergency stationary ICE may be operated for maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local

EASTERN KENTUCKY UNIVERSITY

Serving Kentuckians Since 1906

May 14, 2025

Ms. Stacie Daniels
Supervisor, Combustion Section
Kentucky Division for Air Quality
300 Sower Boulevard, First Floor
Frankfort, KY 40601

Electronically Submitted via EEC eForms

RE: Minor Air Permit Revision Application – Eastern Kentucky University, AI 2820

Dear Ms. Daniels:

Eastern Kentucky University (EKU) located in Richmond, Ky. operates under a conditional major operating permit no. F-20-006 R3 that was issued December 2, 2023.

EKU has prepared this application to request a minor permit revision to register two (2) natural gas-fired indirect head exchangers. These modifications will result in a minor increase in the facility's potential emissions; however, EKU will continue to monitor natural gas usage such that facility-wide CO and NOx emissions stay below the limitations specified in the current air permit (90 tpy each).

SUMMARY OF PLANNED FACILITY CHANGES

EU 112 & 113 – Burnam Hall

EKU plans to install two (2) LAARS natural gas-fired boilers rated at 1.5 MMBtu each in the Burnam Hall dormitory in June 2025 with a start-up date in July 2025. There are no existing natural gas boilers in this building. The boilers will be used for space heat with 8,760 maximum hours of operation per year. There are no emission controls on these units.

PERMIT APPLICATION DISCUSSION

EKU has included the following permit application forms for consideration of this requested change at the facility:

- DEP 7007AI – Administrative Information (minor permit revision)
- DEP 7007A – Indirect Heat Exchangers and Turbines
  - Manufacturer's specification data sheets
- DEP 7007N – Source Emissions Profile
  - Emission factors (AP42)
  - Emission calculations based on 8,760 hours of operation (uncontrolled).
- DEP 7007V – Applicable Requirements and Compliance Activities
  - Draft FESOP language for "New Natural Gas-Fired Indirect Heat Exchangers".

- Note — Form DEP 7007GG is not included because there are no controls on these units.

DRAFT PERMIT

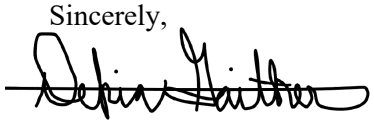
EKU has included with this application recommended draft language in the permit section related to "New Natural Gas-Fired Indirect Heat Exchangers." All the applicable regulations for EKU's current units in this permit section will apply to the new units. The air permit sections that did not change or were unaffected by the planned changes are not included in this submittal.

Upon review of the application, please call if you need additional information or clarification.

MINOR REVISION CERTIFICATION

With my signature below, I am certifying that the changes described in this application meet the criteria for use of minor permit revision procedures at 401 KAR 52:030, Section 14 and I further request that the Division use this minor revision procedure for this application.

Sincerely,



Dekia Gaither
Director of Environmental Health and Safety

CC: Bryan Makinen, EKU, Ops Chief Facilities Management and Safety
Lucy Pacholik, PE, Tetra Tech

Enclosures: Permit Application Forms

Division for Air Quality

300 Sower Boulevard

Frankfort, KY 40601

(502) 564-3999

DEP7007AI

Administrative Information

___ Section AI.1: Source Information

___ Section AI.2: Applicant Information

___ Section AI.3: Owner Information

___ Section AI.4: Type of Application

___ Section AI.5: Other Required Information

___ Section AI.6: Signature Block

___ Section AI.7: Notes, Comments, and Explanations

Additional Documentation

___ Additional Documentation attached

Source Name: **Eastern Kentucky University**

KY EIS (AFS) #: **21- 151-00007**

Permit #: **F-20-006 R3**

Agency Interest (AI) ID: **2820**

Date: **5/14/2025**

Section AI.1: Source Information

Physical Location Address:	**Street:**	521 Lancaster Avenue; Adams House				
	City:	Richmond	**County:**	Madison	**Zip Code:**	40475-3102
Mailing Address:	**Street or P.O. Box:**	521 Lancaster Avenue				
	City:	Richmond	**State:**	KY	**Zip Code:**	40475-3102

Standard Coordinates for Source Physical Location

Longitude: -84.29844 (decimal degrees) **Latitude:** 37.73816 (decimal degrees)

Primary (NAICS) Category: Colleges, Universities, and Professional Schools **Primary NAICS #:** 611310.00

Classification (SIC) Category: Colleges, Universities, and Professional Schools

Primary SIC #: 8221

Briefly discuss the type of business conducted at this site: Educational Institution

Description of Area Surrounding Source: ☐ Rural Area ☐ Industrial Park ☑ Residential Area ☐ Urban Area ☐ Industrial Area ☑ Commercial Area

Is any part of the source located on federal land? ☐ Yes ☐ No

Number of Employees: 1640

Approximate distance to nearest residence or commercial property: *200 ft*

Property Area: **892 ac**

Is this source portable? ☐ Yes ☑ No

What other environmental permits or registrations does this source currently hold or need to obtain in Kentucky?

NPDES/KPDES:	☑ Currently Hold	☐ Need	☐ N/A
Solid Waste:	☐ Currently Hold	☐ Need	☐ N/A
RCRA:	☑ Currently Hold	☐ Need	☐ N/A
UST:	☐ Currently Hold	☐ Need	☐ N/A

Type of Regulated Waste Activity:

☑ Mixed Waste Generator ☐ Generator ☐ Recycler ☐ Other: _____

☐ U.S. Importer of Hazardous Waste ☐ Transporter ☐ Treatment/Storage/Disposal Facility ☐ N/A

Section AI.2: Applicant Information

Applicant Name: Dekia Gaither

Title: (if individual) Director of Environmental Health and Safety

Mailing Address:
Street or P.O. Box: 521 Lancaster Avenue; Adams House
City: Richmond **State:** KY **Zip Code:** 40475-3102

Email: (if individual) Dekia.Gaither@eku.edu

Phone: (859) 622-3437

Technical Contact

Name: same as above

Title:

Mailing Address:
Street or P.O. Box:
City: **State:** **Zip Code:**

Email:

Phone:

Air Permit Contact for Source

Name: Bryan Makinen

Title: AVP for Facilities Mangement and Safety

Mailing Address:
Street or P.O. Box: 424 Lancaster Avenue, Adams House
City: Richmond **State:** KY **Zip Code:** 40475-3102

Email: Bryan.Makinen@eku.edu

Phone: (859) 622-2421

Section AI.3: Owner Information

☑ **Owner same as applicant**

Name: _____

Title: _____

Mailing Address: **Street or P.O. Box:** _____

City: _____ **State:** _____ **Zip Code:** _____

Email: _____

Phone: _____

List names of owners and officers of the company who have an interest in the company of 5% or more.

Name	Position

Section AI.4: Type of Application

Current Status: ☐ Title V ☑ Conditional Major ☐ State-Origin ☐ General Permit ☐ Registration ☐ None

Requested Action: *(check all that apply)*

☐ Name Change	☐ Initial Registration	☐ Significant Revision	☐ Administrative Permit Amendment
☐ Renewal Permit	☐ Revised Registration	☑ Minor Revision	☐ Initial Source-wide OperatingPermit
☐ 502(b)(10)Change	☐ Extension Request	☐ Addition of New Facility	☐ Portable Plant Relocation Notice
☐ Revision	☐ Off Permit Change	☐ Landfill Alternate Compliance Submittal	☐ Modification of Existing Facilities
☐ Ownership Change	☐ Closure		

Requested Status: ☐ Title V ☑ Conditional Major ☐ State-Origin ☐ PSD ☐ NSR ☐ Other: _____

Is the source requesting a limitation of potential emissions? ☑ Yes ☐ No

Pollutant:	Requested Limit:	Pollutant:	Requested Limit:
☐ Particulate Matter		☐ Single HAP	
☐ Volatile Organic Compounds (VOC)		☐ Combined HAPs	
☑ Carbon Monoxide	90 tpy	☐ Air Toxics (40 CFR 68, Subpart F)	
☑ Nitrogen Oxides	90 tpy	☐ Carbon Dioxide	
☐ Sulfur Dioxide		☐ Greenhouse Gases (GHG)	
☐		☐	

For New Construction:

Proposed Start Date of Construction: *(MM/YYYY)* 06/2025

Proposed Operation Start-Up Date: *(MM/YYYY)* 07/2025

For Modifications:

Proposed Start Date of Modification: *(MM/YYYY)*

Proposed Operation Start-Up Date: *(MM/YYYY)*

Applicant is seeking coverage under a permit shield. ☐ **Yes** ☑ **No**

Identify any non-applicable requirements for which permit shield is sought on a separate attachment to the application.

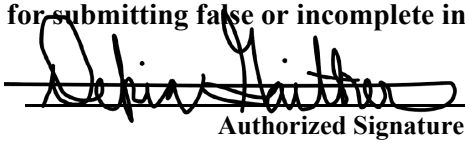
Section AI.5 Other Required Information

Indicate the documents attached as part of this application:

- [x] DEP7007A Indirect Heat Exchangers and Turbines
- [ ] DEP7007B Manufacturing or Processing Operations
- [ ] DEP7007C Incinerators and Waste Burners
- [ ] DEP7007F Episode Standby Plan
- [ ] DEP7007J Volatile Liquid Storage
- [ ] DEP7007K Surface Coating or Printing Operations
- [ ] DEP7007L Mineral Processes
- [ ] DEP7007M Metal Cleaning Degreasers
- [x] DEP7007N Source Emissions Profile
- [ ] DEP7007P Perchloroethylene Dry Cleaning Systems
- [ ] DEP7007R Emission Offset Credit
- [ ] DEP7007S Service Stations
- [ ] DEP7007T Metal Plating and Surface Treatment Operations
- [x] DEP7007V Applicable Requirements and Compliance Activities
- [ ] DEP7007Y Good Engineering Practice and Stack Height Determination
- [ ] DEP7007AA Compliance Schedule for Non-complying Emission Units
- [ ] DEP7007BB Certified Progress Report
- [ ] DEP7007CC Compliance Certification
- [ ] DEP7007DD Insignificant Activities
- [ ] DEP7007EE Internal Combustion Engines
- [ ] DEP7007FF Secondary Aluminum Processing
- [ ] DEP7007GG Control Equipment
- [ ] DEP7007HH Haul Roads
- [ ] Confidentiality Claim
- [ ] Ownership Change Form
- [ ] Secretary of State Certificate
- [ ] Flowcharts or diagrams depicting process
- [ ] Digital Line Graphs (DLG) files of buldings, roads, etc.
- [ ] Site Map
- [ ] Map or drawing depicting location of facility
- [ ] Safety Data Sheet (SDS)
- [ ] Emergency Response Plan
- [x] Other: Manufacturer Specification Sheets and Emissions Calculation Sheets

Section AI.6: Signature Block

I, the undersigned, hereby certify under penalty of law, that I am a responsible official*, and that I have personally examined, and am familiar with, the information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the information is on knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false or incomplete information, including the possibility of fine or imprisonment.



Authorized Signature

05/14/2025

Date

Dekia Gaither

Type or Printed Name of Signatory

Director of Environmental Health and Safety

Title of Signatory

*Responsible official as defined by 401 KAR 52:001.

Section AI.7: Notes, Comments, and Explanations

Division for Air Quality

300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007A

Indirect Heat Exchangers and Turbines

___ Section A.1: General Information
___ Section A.2: Operating and Fuel Information
___ Section A.3: Notes, Comments, and Explanations

Additional Documentation

___ Complete DEP7007AI, DEP7007N, DEP7007V, and DEP7007GG.

____ Manufacturer's specifications

Source Name: Eastern Kentucky University
KY EIS (AFS) #: 21-151-00007
Permit #: F-20-006 R3
Agency Interest (AI) ID: 2820
Date: 5/14/2025

Section A.1: General Information

Emission Unit #	Emission Unit Name	Process ID	Process Name	Identify General Type: Indirect Heat Exchanger, Gas Turbine, or Combustion Turbine	Indirect Heat Exchanger Configuration	Manufacturer	Model No./ Serial No.	Proposed/Actual Date of Construction Commencement *(MM/YYYY)*	SCC Code	SCC Units	Control Device ID	Stack ID
EU 112 & 113	Burnam Hall	N/A	Two (2) 1.5 MMBtu/hr Natural Gas Boilers	Indirect Heat Exchanger	N/A	LAARS	CFH1500NHA1XX/ W24240291 & W24355971	6/15/2025	10200603	MMSCF	N/A	EU 112 & 113

Section A.2: Operating and Fuel Information

Emission Unit #	If multipurpose unit, identify the percentage of use by purpose				Rated Capacity Heat Input *(MMBTU/hr)*	Rated Capacity Power Output		Describe Operating Scenario (only if this unit will be used in different configurations)	Classify Fuel as Primary or Secondary	Identify Fuel Type: Coal, Natural Gas, Wood, Biomass, Landfill/Digester Gas, Fuel Oil # (specify 1-6), or Other	Heat Content (HHV)		Maximum Operating Hours	Ash Content *(%)*	Sulfur Content *(%)*
	Space Heat	Process Heat	Power	Emergency			*(Specify units: hp, MW, or lb steam/hr)*					*(Specify units: Btu/lb, Btu/gal, or Btu/scf)*			
EU 112 & 113	100	0	0	0	1.5			n/a	Primary	Natural Gas	1020	Btu/scf	8760		1 (max)

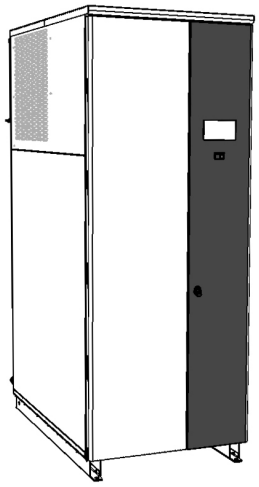
Section A.3: Notes, Comments, and Explanations

MAGNATHERM® FT

Hydronic Boiler

CFH	Firetube Boiler

Indoor/Outdoor, Sizes 1000 - 3000



Date:

Project #:

Engineer:

Prepared By:

Bid Date:

LAARS® Heating Systems Company

Submittal Data

Project Name:

Location:

Contractor:

Standard Features

- ASME "H" stamp
- 160 psi maximum working pressure
- Certified for Category II and Category IV vent systems
- Indoor/outdoor
- Low NOx system exceeds the most stringent regulations for air quality
- High condensing efficiency
- Up to 20:1 turndown modulation
- Sophisticated gas/air valve allows for constant control of modulation
- Tru Trac™ real-time O_2 sensing maintains efficiency throughout the modulation range
- Stainless steel vertical firetube heat exchanger with welded construction
- Sealed combustion chamber
- Pre-mix stainless steel burner
- Electronic PID modulating control with large touchscreen and color display
- Multiple independent heat demands
- VARI-PRIME boiler pump control via user-selectable fixed boiler temperature rise
- Wired and programmed to control boiler isolation valves
- Controller cascades with up to eight MagnaTherm FT boilers
- Accepts 4-20ma or 0-10VDC external modulation or external set point control
- Modbus RTU & BACnet MSTP on board
- Multiple pump control for boiler pump, system pump, & indirect DHW water pump, each with delay
- Indirect water heater priority
- Sensor for indirect DHW tank
- Outdoor reset with air sensor
- Horizontal or vertical direct vent
- Vent and air pipe lengths of up to 100 equivalent feet (each)
- High & low gas pressure switches
- Vent temperature cutoff
- Normally open alarm contact
- Air filter
- Built-in condensate trap
- Temperature & pressure gauge
- Low water cutoff
- Water flow switch
- 75 psi (517kPa) ASME rated pressure relief valve
- Flange water fittings
- Burner site glass
- Heat exchanger warranty:
  10-Year limited non-prorated
  25-year limited thermal shock
- 1-Year limited parts warranty

Boiler Data

Number of Units ☐

Fuel

☐ Natural

Voltage

☐ 120V, single ph (1000-2000)
☐ 208V, single ph (1000-2000)
☐ 220/240V, single ph (1000-2000)
☐ 208V, three ph (2000-3000)
☐ 480V, three ph (2000-3000)
☐ 600V, three ph (2000-3000)

Factory Mounted Options

☐ ASME CSD-1
☐ BACnet IP gateway
☐ LonWorks gateway
☐ Additional auto & manual reset high limit switches
☐ Alarm bell with silence switch
☐ 75 psi pressure relief valve (std)
☐ 30 psi pressure relief valve
☐ 50 psi pressure relief valve
☐ 60 psi pressure relief valve
☐ 125 psi pressure relief valve
☐ 150 psi pressure relief valve

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Accessories for Field Mounting

- ☐ Gateway for BACnet IP
- ☐ Gateway for LonWorks
- ☐ Motorized isolation valve(s)
- ☐ Condensate neutralizer
- ☐ Condensate neutralizer with pump
- ☐ Vent terminal for outdoor unit
- ☐ Screen for outdoor unit air
- ☐ Vent terminal for horizontal stainless steel vent
- ☐ Screen for vertical stainless steel vent
- ☐ Screen for horizontal CPVC vent
- ☐ Screen for vertical CPVC vent
- ☐ Screen for horizontal polypropylene vent
- ☐ Screen for vertical polypropylene vent
- ☐ Screen/adapter for vertical or horizontal PCV ducted air
- ☐ Screen for horizontal galvanized or vertical ducted air
- ☐ Screen for horizontal polypropylene ducted air
- ☐ Screen for vertical polypropylene ducted air

Sizing Data

Model	Minimum Input Rate		Maximum Input Rate		Minimum Output Rate		Maximum Output Rate		Thermal Efficiency	Combustion Efficiency	Modulation Turndown Ratio
	MBH	***kw***	**MBH**	***kw***	**MBH**	***kw***	**MBH**	***kw***	**%**	**%**	
1000	67	*19.6*	999.9	*293*	63	*18.5*	950	*278*	95.8	96.1	15:1
1500	75	*22.0*	1500	*440*	71	*20.8*	1425	*418*	95.9	96.3	20:1
2000	100	*29.3*	1999.9	*586*	95	*27.8*	1900	*557*	95.4	95.5	20:1
3000	150	*44.0*	3000	*879*	143	*41.9*	2850	*835*	95.9	95.9	20:1

Model	**Product Weight**		**Operating Weight**		**Shipping Weight**		**Water Content**	
	lbs	***kg***	**lbs**	***kg***	**lbs**	***kg***	**gal**	***l***
1000	1300	*590*	1934	*878*	1450	*658*	76	*288*
1500	1450	*658*	2292	*1041*	1600	*726*	101	*382*
2000	1750	*795*	2717	*1234*	1950	*885*	116	*439*
3000	2050	*931*	3292	*1495*	2250	*1022*	149	*564*

Clearances

	Clearance to Combustibles		Suggested Service Clearance	
	inches	*cm*	inches	*cm*
Front	18	*46*	24	*61*
Back	18	*46*	24	*61*
Left	3	*8*	12	*30*
Right	3	*8*	12	*30*
Top	3*	*8*	24*	*61*

Note: A 4" high equipment pad is required.
This pad must NOT extend more than 3" beyond the boiler base structure at the rear of the boiler.
*24" top clearance is suggested to service the unit.

Electrical Data

	1000 Current			1500 Current			2000 Current			3000 Current		
Voltage	FLA	MCA	MOP	FLA	MCA	MOP	FLA	MCA	MOP	FLA	MCA	MOP
120V, 1 phase	5.0	6.2	15.0	6.2	7.8	15.0	7.8	9.7	20.0	N/A	N/A	N/A
208V, 1 phase	2.9	3.6	15.0	3.6	4.5	15.0	4.5	5.6	15.0	N/A	N/A	N/A
220/240V, 1 phase	2.7	3.4	15.0	3.4	4.2	15.0	4.3	5.3	15.0	N/A	N/A	N/A
208V, 3 phase	N/A	N/A	N/A	N/A	N/A	N/A	3.3	4.1	15.0	4.5	5.6	15.0
480V, 3 phase	N/A	N/A	N/A	N/A	N/A	N/A	1.5	1.9	15.0	2.1	2.6	15.0
600V, 3 phase	N/A	N/A	N/A	N/A	N/A	N/A	1.1	1.4	15.0	1.4	1.8	15.0

Full Load Amperage
Minimum Circuit Ampacity
Max Over-current Protection

Vent Information

Model	Vent / Air Connector Size		Air Pipe Size		Maximum Ducted Air Pipe Length		Category IV Vent Pipe Size		Maximum Category IV Vent Pipe Length		Typical Category II Vent Pipe Size***	
	inches	*cm*	inches	*cm*	ft*	*m*	inches	*cm*	ft*	*m*	inches	*cm*
1000	6	*15*	6	*15*	100	*30.5*	6	*15*	100	*30.5*	12	*30*
1500	8	*20*	8	*20*	100	*30.5*	8	*20*	100	*30.5*	14	*36*
2000	8	*20*	8	*20*	100	*30.5*	8	*20*	100	*30.5*	18	*46*
3000	10	*25*	10	*25*	100	*30.5*	10	*25*	100	*30.5*	22	*56*

*Equivalent Feet: Equivalent Feet: To calculate maximum equivalent length, measure the linear feet of the pipe and add 5 feet (1.5m) for each elbow used.

***Category II: Category II pipe size may vary. Draft must remain between -0.1 and -0.001" w.c..

Notes:

1. Installations in the U.S. require exhaust vent pipe that is CPVC complying with ANSI/ASTM D1785 F441, stainless steel complying with UL1738, or polypropylene complying with ULC S636.
2. Installations in Canada require exhaust vent pipe that is certified to ULC S636.
3. Intake (air) pipe must be PVC or CPVC that complies with ANSI/ASTM D1785 F441, ABS that complies with ANSI/ASTM D1527, stainless steel, or galvanized material.

Water Flow Requirements

Temperature Rise

Model	20°F		30°F		40°F		50°F		60°F		70°F	
	Flow gpm	HL* ft	Flow gpm	HL* ft	Flow gpm	HL* ft	Flow gpm	HL* ft	Flow gpm	HL* ft	Flow gpm	HL* ft
1000	95	1.9	63	1.1	48	0.7	38	0.5	32	0.4	27	0.3
1500	142	3.4	95	1.6	71	1.0	57	0.6	48	0.5	41	0.3
2000	190	4.5	127	2.1	95	1.2	76	0.8	63	0.6	54	0.4
3000	285	7.0	190	3.5	142	2.1	114	1.4	95	1.0	81	0.8

*Headloss is for boiler only (no piping).

Temperature Rise

Model	*11°C*		*17°C*		*22°C*		*28°C*		*33°C*		*39°C*	
	Flow l/m	*HL* (m)*	*Flow l/m*	*HL* (m)*	*Flow l/m*	*HL* (m)*	*Flow l/m*	*HL* (m)*	*Flow l/m*	*HL* (m)*	*Flow l/m*	*HL* (m)*
1000	*360*	*0.6*	*239*	*0.3*	*182*	*0.2*	*144*	*0.2*	*121*	*0.1*	*102*	*0.1*
1500	*538*	*1.0*	*360*	*0.5*	*269*	*0.3*	*216*	*0.2*	*182*	*0.2*	*155*	*0.1*
2000	*719*	*1.4*	*481*	*0.6*	*360*	*0.4*	*288*	*0.2*	*239*	*0.2*	*204*	*0.1*
3000	*1079*	*2.1*	*719*	*1.1*	*538*	*0.6*	*432*	*0.4*	*360*	*0.3*	*307*	*0.2*

**Headloss is for boiler only (no piping).*

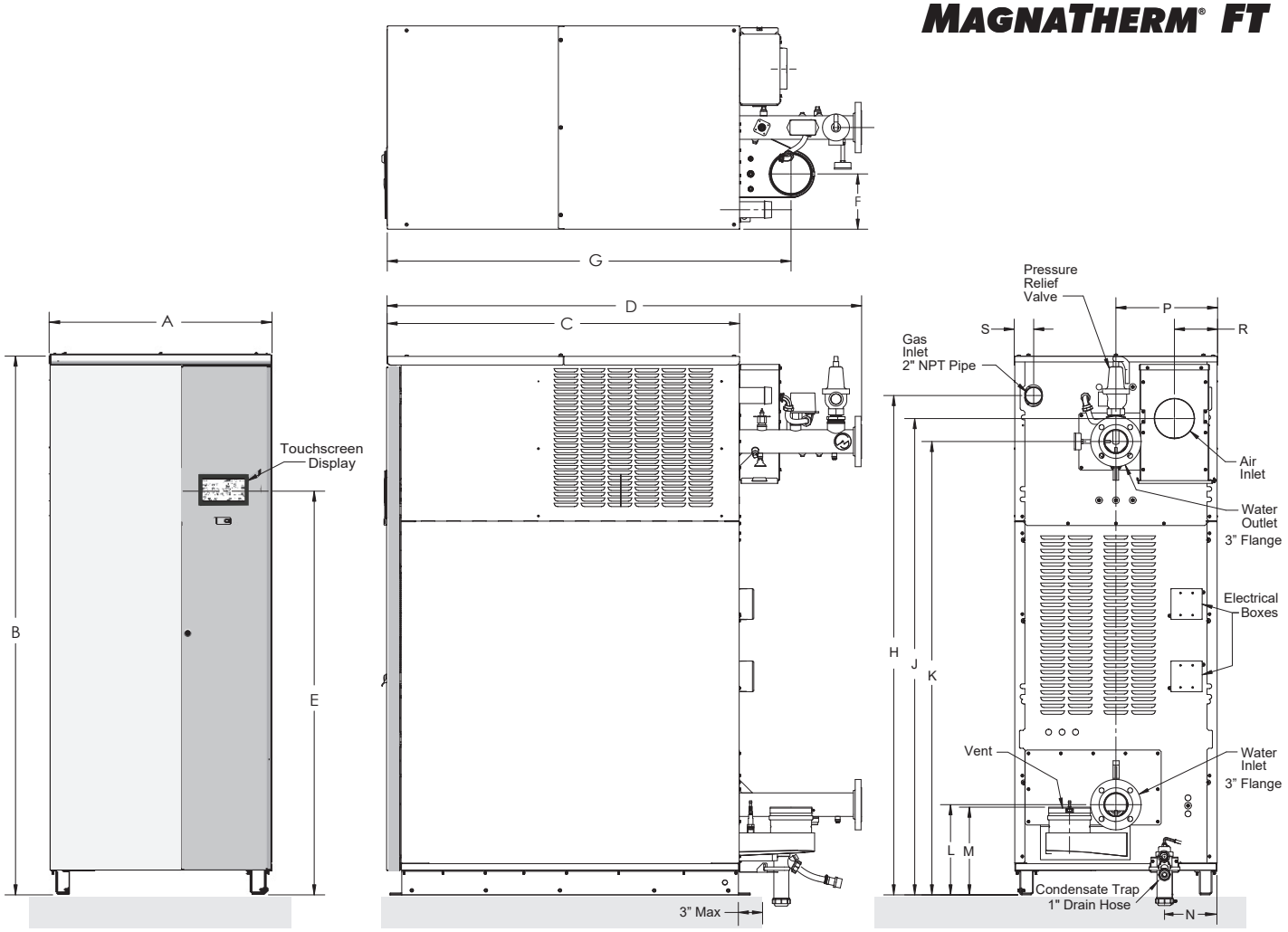
Dimensional Data

Model	"A"		"B"		"C"		"D"		"E"		"F"		"G"		"H"	
	in	*(cm)*	in	*(cm)*	in	*(cm)*	in	*(cm)*	in	*(cm)*	in	*(cm)*	in	*(cm)*	in	*(cm)*
1000	30.2	*(76.7)*	80.0	*(203)*	52.4	*(133)*	70.5	*(179)*	60.0	*(152)*	8.2	*(20.9)*	60.0	*(152)*	74.2	*(188)*
1500	30.2	*(76.7)*	80.0	*(203)*	52.4	*(133)*	70.5	*(179)*	60.0	*(152)*	7.8	*(19.7)*	60.3	*(153)*	74.2	*(188)*
2000	34.6	*(87.9)*	80.0	*(203)*	56.3	*(143)*	73.3	*(189)*	60.0	*(152)*	9.1	*(23.0)*	63.1	*(160)*	73.6	*(187)*
3000	34.6	*(87.9)*	80.0	*(203)*	56.3	*(143)*	75.5	*(192)*	60.0	*(152)*	8.4	*(21.4)*	65.4	*(166)*	73.6	*(187)*

Model	"J"		"K"		"L"		"M"		"N"		"P"		"R"		"S"	
	in	*(cm)*	in	*(cm)*	in	*(cm)*	in	*(cm)*	in	*(cm)*	in	*(cm)*	in	*(cm)*	in	*(cm)*
1000	70.8	*(180)*	67.3	*(171)*	13.4	*(34.0)*	13.0	*(33.1)*	7.9	*(20)*	15.1	*(38.4)*	6.4	*(16.3)*	2.9	*(7.3)*
1500	70.8	*(180)*	67.3	*(171)*	13.4	*(34.0)*	13.0	*(33.1)*	7.9	*(20)*	15.1	*(38.4)*	6.4	*(16.3)*	2.7	*(6.9)*
2000	72.0	*(183)*	67.3	*(171)*	13.4	*(34.0)*	13.0	*(33.1)*	10.1	*(26)*	17.3	*(44.0)*	8.2	*(20.9)*	3.8	*(9.5)*
3000	72.0	*(183)*	68.4	*(174)*	14.4	*(36.6)*	14.0	*(35.5)*	10.1	*(26)*	17.3	*(44.0)*	8.2	*(20.9)*	3.6	*(9.1)*

Inlet and outlet water connections are 3-inch 150# flanges, 4 hole, 6" bolt circle

MAGNATHERM® FT



Laars Heating Systems Company reserves the right to change specifications, components, features, or to discontinue products without notice.

LAARS® Heating Systems Company

Customer Service and Product Support: **800.900.9276 • Fax 800.559.1583**

Headquarters: **20 Industrial Way, Rochester, NH, USA 03867 • 603.335.6300 • Fax 603.335.3355**

9 Brigden Gate, Halton Hills, Ontario, Canada L7G 0A3 (905) 203-0600 Fax: (905) 636-0666

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Division for Air Quality

300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007N

Source Emissions Profile

__ Section N.1: Emission Summary
__ Section N.2: Stack Information
__ Section N.3: Fugitive Information
__ Section N.4: Notes, Comments, and Explanations

Additional Documentation

___ Complete DEP7007AI

Source Name: **Eastern Kentucky University**
KY EIS (AFS) #: **21- 151-00007**
Permit #: **F-20-006 R3**
Agency Interest (AI) ID: **2820**
Date: **5/14/2025**

N.1: Emission Summary

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity *(SCC Units/hour)*	Pollutant	Uncontrolled Emission Factor *(lb/SCC Units)*	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency *(%)*	Control Efficiency *(%)*	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential *(lb/hr)*	Controlled Potential *(lb/hr)*	Uncontrolled Potential *(tons/yr)*	Controlled Potential *(tons/yr)*
EU 112 & 113	Burnam Hall	N/A	(2) 1.5 MMBtu NG Boilers	N/A	N/A	EU 112 & 113	0.0015 MMSCF/hr	See attached	See attached	AP-42 Table 1.4-1, 2, 3, 4	100.00%	0.00%	See attached	See attached	See attached	See attached

Section N.2: Stack Information

UTM Zone:

Stack ID	Identify all Emission Units (with Process ID) and Control Devices that Feed to Stack	Stack Physical Data			Stack UTM Coordinates		Stack Gas Stream Data		
		Equivalent Diameter *(ft)*	Height *(ft)*	Base Elevation *(ft)*	Northing *(m)*	Easting *(m)*	Flowrate *(acfm)*	Temperature *(° F)*	Exit Velocity *(ft/sec)*
EU 112 & 113	Burnam Hall	0.5	35	1005	4180509.55	738027.25	<50	<250	

Section N.3: Fugitive Information

UTM Zone:

Emission Unit #	Emission Unit Name	Process ID	Area Physical Data		Area UTM Coordinates		Area Release Data	
			Length of the X Side *(ft)*	Length of the Y Side *(ft)*	Northing *(m)*	Easting *(m)*	Release Temperature *(°F)*	Release Height *(ft)*

Section N.4: Notes, Comments, and Explanations

Eastern Kentucky University AI 2820
Attachment to DEP 7007N
Emission Calculations and Emission Factors

Emission Units 112 & 113 - Burnam Hall

Total Power Output:	1.500	MMBtu/hr each	**Max Usage:**	8,760	hr/yr
	2	MMBtu/hr Total	**Actual Usage*:**	8,760	hr/yr
Heating Value:	1,020	Btu/scf			

Heater Emission Factors				
Pollutant	**Emission Factor**		**Data Source**	
CO	84	lb/10^6scf	AP 42, Table 1.4-1	
NO_x	50	lb/10^6scf	AP 42, Table 1.4-1	LO NOX
CO_2	120000	lb/10^6scf	AP 42, Table 1.4-2	
Lead	0.0005	lb/10^6scf	AP 42, Table 1.4-2	
N_2O	2.20	lb/10^6scf	AP 42, Table 1.4-2	
PM	7.6	lb/10^6scf	AP 42, Table 1.4-2	
PM_{10}	7.6	lb/10^6scf	AP 42, Table 1.4-2	
$PM_{2.5}$	7.6	lb/10^6scf	AP 42, Table 1.4-2	
SO_2	0.6	lb/10^6scf	AP 42, Table 1.4-2	
TOC	11.0	lb/10^6scf	AP 42, Table 1.4-2	
Methane	2.3	lb/10^6scf	AP 42, Table 1.4-2	
VOC	5.5	lb/10^6scf	AP 42, Table 1.4-2	
Total HAP	1.89	lb/10^6scf	AP 42, Table 1.4-3 & 4	
Acenaphthene	1.80E-06	lb/10^6scf	AP 42, Table 1.4-3	
Acenaphthylene	1.80E-06	lb/10^6scf	AP 42, Table 1.4-3	
Anthracene	2.40E-06	lb/10^6scf	AP 42, Table 1.4-3	
Arsenic	2.00E-04	lb/10^6scf	AP 42, Table 1.4-4	
Benz(a)anthracene	1.80E-06	lb/10^6scf	AP 42, Table 1.4-3	
Benzene	2.10E-03	lb/10^6scf	AP 42, Table 1.4-3	
Benzo(a)pyrene	1.20E-06	lb/10^6scf	AP 42, Table 1.4-3	
Benzo(b)fluoranthene	1.80E-06	lb/10^6scf	AP 42, Table 1.4-3	
Benzo(g,h,i)perylene	1.20E-06	lb/10^6scf	AP 42, Table 1.4-3	
Benzo(k)fluoranthene	1.80E-06	lb/10^6scf	AP 42, Table 1.4-3	
Beryllium	1.20E-05	lb/10^6scf	AP 42, Table 1.4-4	
Cadmium	1.10E-03	lb/10^6scf	AP 42, Table 1.4-4	
Chromium	1.40E-03	lb/10^6scf	AP 42, Table 1.4-4	
Chrysene	1.80E-06	lb/10^6scf	AP 42, Table 1.4-3	
Cobalt	8.40E-05	lb/10^6scf	AP 42, Table 1.4-4	
Dibenzo(a,h)anthracene	1.20E-06	lb/10^6scf	AP 42, Table 1.4-3	
Dichlorobenzene	1.20E-03	lb/10^6scf	AP 42, Table 1.4-3	
7,12-Dimethylbenz(a)anth	1.60E-05	lb/10^6scf	AP 42, Table 1.4-3	
Fluoranthene	3.00E-06	lb/10^6scf	AP 42, Table 1.4-3	
Fluorene	2.80E-06	lb/10^6scf	AP 42, Table 1.4-3	
Formaldehyde	7.50E-02	lb/10^6scf	AP 42, Table 1.4-3	
Hexane	1.80E+00	lb/10^6scf	AP 42, Table 1.4-3	
Indeno(1,2,3-cd)pyrene	1.80E-06	lb/10^6scf	AP 42, Table 1.4-3	
Manganese	3.80E-04	lb/10^6scf	AP 42, Table 1.4-4	
Mercury	2.60E-04	lb/10^6scf	AP 42, Table 1.4-4	
2-Methylnaphthalene	2.40E-05	lb/10^6scf	AP 42, Table 1.4-3	
3-Methylchloranthrene	1.80E-06	lb/10^6scf	AP 42, Table 1.4-3	
Naphthalene	6.10E-04	lb/10^6scf	AP 42, Table 1.4-3	
Nickel	2.10E-03	lb/10^6scf	AP 42, Table 1.4-4	
Phenanathrene	1.70E-05	lb/10^6scf	AP 42, Table 1.4-3	
Pyrene	5.00E-06	lb/10^6scf	AP 42, Table 1.4-3	
Selenium	2.40E-05	lb/10^6scf	AP 42, Table 1.4-4	
Toluene	3.40E-03	lb/10^6scf	AP 42, Table 1.4-3	

Combined Annual Emissions Calculations - (NG Heat Exchangers - 2 units combined)					
Pollutant	**Uncontrolled (8,760 hr/yr)**		**Controlled*[1] (8,760 hr/yr)**		**Emissions**
	lb/yr	tons/yr	lb/yr	ton/yr	**lbs/hr**
CO	2,164.24	1.08	2,164.24	1.08	**0.247**
NO_x	1,288.24	0.64	1,288.24	0.64	**0.147**
CO_2	3,091,764.71	1545.88	3,091,764.71	1545.88	**352.941**
Lead	1.29E-02	0.00	0.01	0.00	**0.000**
N_2O	56.68	0.03	56.68	0.03	**0.006**
PM	195.81	0.10	195.81	0.10	**0.022**
PM_{10}	195.81	0.10	195.81	0.10	**0.022**
$PM_{2.5}$	195.81	0.10	195.81	0.10	**0.022**
SO_2	15.46	0.01	15.46	0.01	**0.002**
TOC	283.41	0.14	283.41	0.14	**0.032**
Methane	59.26	0.03	59.26	0.03	**0.007**
VOC	141.71	0.07	141.71	0.07	**0.016**
Total HAP	48.64	0.02	48.64	0.02	**0.006**

Note 1 - No controls on boiler emissions other than low NOX burners

Division for Air Quality

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DEP7007V
Applicable Requirements and Compliance Activities

___ Section V.1: Emission and Operating Limitation(s)
___ Section V.2: Monitoring Requirements
___ Section V.3: Recordkeeping Requirements
___ Section V.4: Reporting Requirements
___ Section V.5: Testing Requirements
___ Section V.6: Notes, Comments, and Explanations

Additional Documentation
___ Complete DEP7007AI

Source Name: **Eastern Kentucky University**
KY EIS (AFS) #: **21-151-00007**
Permit #: **F-20-006 R3**
Agency Interest (AI) ID: **2820**
Date: **5/14/2025**

Section V.1: Emission and Operating Limitation(s)

Emission Unit #	Emission Unit Description	Applicable Regulation or Requirement	Pollutant	Emission Limit (if applicable)	Voluntary Emission Limit or Exemption (if applicable)	Operating Requirement or Limitation (if applicable)	Method of Determining Compliance with the Emission and Operating Requirement(s)

See attached draft FESOP pg. 5-6; applicable regulations and requirements for two new natural gas fired indirect heat exchangers subject to 401 KAR 52:030 and 59:015.

Section V.2: Monitoring Requirements

Emission Unit #	Emission Unit Description	Pollutant	Applicable Regulation or Requirement	Parameter Monitored	Description of Monitoring

See attached draft FESOP pg. 5-6;
applicable regulations and requirements for two new natural gas fired indirect heat exchangers subject to 401 KAR 52:030 and 59:015.

Section V.3: Recordkeeping Requirements

Emission Unit #	Emission Unit Description	Pollutant	Applicable Regulation or Requirement	Parameter Recorded	Description of Recordkeeping
		See attached draft FESOP pg. 5-6 applicable regulations and requirements for two new natural gas fired indirect heat exchangers subject to 401 KAR 52:030 and 59:015.			

Section V.4: Reporting Requirements

Emission Unit #	Emission Unit Description	Pollutant	Applicable Regulation or Requirement	Parameter Reported	Description of Reporting
			See attached draft FESOP pg. 5-6; applicable regulations and requirements for two new natural gas fired indirect heat exchangers subject to 401 KAR 52:030 and 59:015.		

Section V.5: Testing Requirements

Emission Unit #	Emission Unit Description	Pollutant	Applicable Regulation or Requirement	Parameter Tested	Description of Testing

See attached draft FESOP pg. 5-6;
applicable regulations and requirements for two new natural gas fired indirect heat exchangers subject to 401 KAR 52:030 and 59:015.

Section V.6: Notes, Comments, and Explanations

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

EU11-72, not all Inclusive, and EU100 - EU~~108~~ 113, all inclusive; ~~Thirty-Eight (38)~~ Forty-three (43) New Natural Gas Fired Indirect Heat Exchangers

Description:

Emission Units #	Heat Input Capacity (MMBtu/hr)	Location	Manufacturer	Year
11	3.348	Campbell	Sellers	1973
16	2.4	Commonwealth	Sellers	1987
19	6.276	Moore Science	Sellers	1987
23	2.4	Palmer	Sellers	1989
24	1.256	Dizney Bldg	Sellers	1990
25	5.231	Wallace	Sellers	1990
26	1.674	Rowlett	Weil-McLain	2021
28	2.4	Walters Hall	Sellers	1998
41	2.929	Business & Technology	Sellers	2005
42	1.44	Clay	Lochinvar	2007
45	1.0	Business & Technology (2)	Lochinvar	2009
46	2.0	Performing Arts	Lochinvar	2010
47	2.0	Performing Arts (2)	Lochinvar	2010
48	2.0	Performing Arts (3)	Lochinvar	2010
49	2.0	Alumni Coliseum	Weil-McLain	2010
50	8.369	Science Bldg (NSB)	Sellers	2010
51	8.369	Science Bldg (NSB)	Sellers	2010
54	1.993	South Hall	A.B. Young	2013
55	1.993	South Hall	A.B. Young	2013
57	5.231	Keene Hall	Sellers	2015
58	5.231	Keene Hall	Sellers	2015
59	5.231	Palmer	Sellers	2015
60	5.231	Walters	Sellers	2015
61	2.080	Gentry Bldg.	Weil-McLain	2015
68	2.07	Arlington Pool	Lochinvar	2018
69	2.0	Case Dining Hall	Fulton	2017
70	2.0	Case Dining Hall	Fulton	2017
71	1.999	North Hall	Lochinvar	2016
72	1.999	North Hall	Lochinvar	2016
100	1.999	Martin Hall	Lochinvar	2017
101	1.999	Martin Hall	Lochinvar	2017
102	2.0	Combs Bldg.	Lochinvar	2020
103	2.0	Combs Bldg.	Lochinvar	2020
104	2.511	Burrier Bldg.	Sellers	2020
105	2.0	Mattox	RBI	2023
106	2.0	Mattox	RBI	2023
107	1.5	Whitlock	Lochinvar	2023
108	1.5	Whitlock	Lochinvar	2023
109	**3.0**	**Alumni Coliseum**	**Lochinvar**	**2024**
110	**3.0**	**Alumni Coliseum**	**Lochinvar**	**2024**
111	**3.0**	**Alumni Coliseum**	**Lochinvar**	**2024**

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

112	**1.5**	**Burnam Hall**	**LAARS**	**2025**
113	**1.5**	**Burnam Hall**	**LAARS**	**2025**

APPLICABLE REGULATIONS:

401 KAR 59:015, *New indirect heat exchangers*

1. **Operating Limitations:**
   a. The permittee shall comply with 401 KAR 50:055, Section 2(5). [401 KAR 59:015, Section 7(1)(a)].

   b. The frequency and duration of startup periods or shutdown periods shall be minimized by the affected facility [401 KAR 59:015, Section 7(1)(b)]

   c. All reasonable steps shall be taken by the permittee to minimize the impact of emissions on ambient air quality from the affected facility during startup periods and shutdown periods. [401 KAR 59:015, Section 7(1)(c)]

   d. Startups and shutdowns shall be conducted according to either: [401 KAR 59:015, Section (1)(e)]
      i. The manufacturer's recommended procedures or [401 KAR 59:015, Section 7(1)(e)1.];

      ii. Recommended procedures for a unit of similar design, for which manufacturer's recommended procedures are available, as approved by the cabinet based on documentation provided by the permittee [401 KAR 59:015, Section 7(1)(e)2.].

   Compliance Demonstration Method:
   Compliance shall be demonstrated according to **5. Specific Recordkeeping Requirements (b)**.

2. **Emission Limitations:**
   a. Particulate emissions from each unit shall not exceed 0.10 lb/MMBtu. [401 KAR 59:015, Section 4(1)(b)]

   b. The visible emissions shall not exceed 20 percent opacity except [401 KAR 59:015, Section 4(2)]:
      i. A maximum of 27 percent opacity shall be allowed for one six-minute period in any sixty consecutive minutes; [401 KAR 59:015, Section 4(2)(a)]

      ii. For emissions from an affected facility caused by building a new fire, emissions during the period required to bring the boiler up to operating conditions shall be allowed, if the method used is recommended by the manufacturer and the time does not exceed the manufacturer's recommendations. [401 KAR 59:015, Section 4(2)(c)]

   c. Sulfur dioxide emissions from each unit shall not exceed 0.80 lb/MMBtu. [401 KAR 59:015, Section 5(1)(b)1.]

   Compliance Demonstration Method:
   Units are assumed in compliance with the 401 KAR 59:015 PM, SO_2, and opacity standards while burning natural gas.

   d. See **Section D - source Emission Limitations and Testing Requirements**.