BASIC APPLICATION FOR EQUIPMENT / AIR POLLUTION PERMIT OR CERTIFICATE OF OPERATION

FORM E001
03/2011

1. Name of Company Covenant Funeral Service Inc,
(If corporation or LLC name on file with Tennessee Secretary of State Corporate Records Division)

2. NAICS Code: 812210

3. Company Official to Contact: Ben Crox

4. Phone No. 423-485-0911

5. Mailing Address: 4340 Bonny Oaks Drive, Chattanooga, TN 37416
Street or P.O. Box *City* *State* *Zip Code*

6. Physical Location
(If different from line 5)
Street *City* *State* *Zip Code*

7. Application for:
✔ Installation Permit Initial Certificate of Operation Renewal Certificate of Operation

Previous Installation Permit or Certificate of Operation No.:

8. Type of equipment for which application is made:

☐ Process Equipment (Form E010 or Form E010A)	☐ Previously Submitted	☐ Attached
☐ Fuel Burning Equipment (Form E011)	☐ Previously Submitted	☐ Attached
☑ Incineration Equipment (Form E012)	☐ Previously Submitted	☐ Attached
☐ Minor Pollution Source (Form E014) *(Less than 1000 lbs yr and less than 10 lbs day total uncontrolled contaminant emissions)*	☐ Previously Submitted	☑ Attached

The following forms are filed with this application:
E106

9. Equipment Name:
KMH 1100-300

10. If application is for a Certificate of Operation (Initial or Renewal), are there any changes since previous application in the equipment or operation which might:

A. Increase, decrease, or alter process materials, fuel, refuse type, etc.? ☐ Yes ☑ No

B. Increase, decrease, or alter emissions or emission points? ☐ Yes ☑ No

11. Process Weight, lb/hr, (Item 6 on Form E010), Incineration Rate, lb/hr, (Item 3C on Form E012), or Fuel Burning Rate, 1,000 Btu/hr, (Item 7C on Form E011): 400 lb/hr

This is to certify that I am familiar with operations concerning this equipment and the information provided on this application is true and complete to the best of my knowledge:

Mail completed form to
CHATTANOOGA-HAMILTON COUNTY
AIR POLLUTION CONTROL BUREAU
2034 Hamilton Place Blvd., Suite 300
Chattanooga, TN 37421

This form must be completely filled out before it will be processed

Name
Funeral Director
Title
4-29-24
Date

INCINERATOR APPLICATION

FORM E012
7/2001

1. Name of Company: Covenant Funeral Service Inc
(As shown on Line 1, Form E001)

2. Equipment Name: KMH 1100-300
(As shown on Line 10, Form E001)

3. **Equipment Data:**

A. Manufacturer: KELLER MFG.
B. Model Number: KMH1100-300
C. Rate Capacity: 150-300 Lbs/hr.
D. Date of Manufacture: MAY 15, 2024
E. Date of Installation: 5-30-24

4. **Equipment Design:**

A. Number of Chambers: ONE
B. Primary Chamber Burner Rating: 1 MILLION BTU/hr Type of Fuel: NATURAL GAS
C. Secondary Chamber Burner Rating: 2 MILLION BTU/hr Type of Fuel: NATURAL GAS
D. Tertiary Chamber Burner Rating: N/A BTU/hr Type of Fuel: N/A

5. **Emissions Data:**

A. ☐ Emissions Uncontrolled
B. ☐ Baghouse (File Form E102)
C. ☐ Wet Collecting Device (File Form E103)
D. ☐ Electrostatic Precipitator (File Form E104)
E. ☐ Inertial Separator (File Form E105)
F. ☐ Other (Specify): _____

G. Actual Emissions:

Air Contaminant	Actual Emission Rate
Particulate Matter	_____ Lbs/hr.
NO_2	_____ Lbs/hr.
SO_2	_____ Lbs/hr.
CO	_____ Lbs/hr.
VOC	_____ Lbs/hr.
Other: _____	_____ Lbs/hr.
_____	_____ Lbs/hr.
_____	_____ Lbs/hr.

☐ Emissions determined by stack test (submit report)

☐ Emissions Estimated (File Form E106)

See Stack Test

6. **Incinerator Operation:**

A. Average amount of waste burned: 180 Lbs/day
B. Type of waste normally burned: 4 (See Table Below)

Type	Principal Components, Usual Source, and Moisture Content
0	Highly combustible waste, paper, wood, cardboard cartons, including up to 10% treated papers, plastic or rubber scraps. This type of waste may have up to 10% moisture and 5% incombustible solids and have a heating value of 2500 BTU/hr as fired.
1	Combustible waste, paper, cartons, rags, wood scraps, combustible floor sweepings, and foliage. The mixture may contain up to 20% by weight of restaurant or cafeteria waste, but contains less than 10% treated papers, plastic, or rubber wastes. This type of waste may have up to 25% moisture and 10% incombustible solids and has a heating value of 6500 BTU/hr as fired.
2	Refuse consisting of an approximately even mixture of rubbish and garbage by weight. This type of waste is common to apartment and residential occupancy, consisting of up to 50% moisture and 7% incombustible solids and has a heating value of 4300 BTU/hr as fired.
3	Garbage consisting of animal and vegetable wastes from restaurants, cafeterias, hotels, hospitals, markets, and similar installations. This type of waste may contain up to 70% moisture and up to 5% incombustible solids and has a heating value of 2500 BTU/hr as fired.
4	Infectious waste: as defined by the Chattanooga Air Pollution Control Ordinance, Section 4-41, Rule 20.4.
5	By-product waste, gaseous, liquid or semi-liquid, such as tar, paints, solvents, sludge, fumes, etc. from industrial operations. Fill in the following: Heating value _____ BTU/hr. % Incombustibles _____. % Moisture _____.
6	Solid by-product waste, such as rubber, plastics, wood waste, etc. from industrial operations. Fill in the follow: Heating value: _____ BTU/hr; % Incombustibles _____ % Moisture _____

MINOR POLLUTION SOURCE APPLICATION

FORM E014 07/2001

1. Name of Company: Covenant Funeral Service Inc
(As shown on Line 1 of Form E001)

2. Name of Equipment: KMH 1100-300
(As shown on Line 9 of Form E001)

3. Type of Operation: Cremation

4. Major Raw Materials: Human Remains

5. Control Equipment Data:

- ☐ Emissions Uncontrolled
- ☐ Baghouse (File Form E102)
- ☐ Wet Collecting Device (File Form E103)
- ☐ Electrostatic Precipitator (File Form E104)
- ☒ Other (specify): Packaged unit w/ secondary
- ☐ Inertial Separators (File Form E105)
- ☐ Adsorption System (File Form E108)
- ☐ Flame or Catalytic Destruction (File Form E109)
- ☐ Masking Agent or Odor Counteragent (File Form E111)

6. Control Equipment Efficiency:
Control equipment efficiency for each pollutant emitted by this equipment (from appropriate From E102, E103, E104, E105, E107 or enter zeros if "A" is checked in Item 5):

Pollutant	% Efficiency
Particulates	
SO_x	
NO_x	
CO	
Hydrocarbons	
Other:	

See Stack Test

7. Uncontrolled Emissions into Atmosphere:

Pollutant	Amount Emitted (lbs/hr)
Particulates	
SO_x	
NO_x	
CO	
Hydrocarbons*	

See Stack Test

- ☒ The values shown were determined by actual stack test (submit copy of stack test report with full details).
- ☐ The values shown were estimated (file Form E106 for each pollutant shown).

*This should include only true hydrocarbons such as ethane, propane, ethylene, etc. List other organic compounds separately.

8. Those emissions indicated in Item 7 may at times under normal operating conditions cause (check one or more):

- ☐ Odors
- ☐ Property Damage
- ☐ Health Effects
- ☐ Eye Irritations
- ☐ Other nuisances outside of plant property
- ☒ No environmental damage

9. Do the emissions from this equipment contain asbestos, mercury, or beryllium?

- ☐ Yes
- ☒ No

10. Emission Point Data:

Stack height (emission point) above ground:	22	Ft
Ground elevation above sea level at stack base:	7	Ft
Stack Diameter:	2	Ft
Volume of gas discharged into atmosphere:	687	Cfm
Gas exit Temperature:	1533	°F

11. Average Equipment Operating Time:

Daily	2	Hours
Weekly	6	Days
Yearly	52	Weeks

This is to certify that I am familiar with the operations concerning this equipment and that the information provided on this application is true and complete to the best of my knowledge. ***This form must be completely filled out before it will be acceptable.***

Mail to:
CHATTANOOGA-HAMILTON COUNTY
AIR POLLUTION CONTROL BUREAU
2034 Hamilton Place Blvd. Suite 300
Chattanooga, TN 37421

Company Official: _____
Signature

Title: Funeral Director

Date: 5-3-24

DO NOT WRITE BELOW THIS LINE

_____ Engineer Approval

This form corresponds to permit number: _____

UTM coordinates of company: EW: _____ NS: _____

Special Notations: _____

POLLUTION ESTIMATION FORM

FORM E106
01/2001

1. Name of Company: Covenant Funeral Service, Inc
   As shown on Line 1 of Form E001
2. Equipment Name: K L H 1100-300
   As shown on Line 9 of Form E001
3. Type of pollutant for which estimate is made: See Stack Test

4. Pollution Emission Factor (PEF): See Stack Test
   (Give value & units in lbs/ton, lbs/lb, lbs/gal, gr/ft³, etc.)

   Source of Emission Factor: See Stack Test

5. Uncontrolled Pollution Emission Rate: See Stack Test

   _____ X _____ = _____
   (PEF from Item 4) *(Give operating rate for this equipment and the appropriate units in either lbs/hr, tons/hr, gal/hr, or cf/m)* **(Give value & units)**

6. Uncontrolled Emission Rate: _____ **Pounds emitted per hour**

This is to certify that I am familiar with the operations concerning this equipment and that the information provided on this application is true and correct to the best of my knowledge. ***This form must be completely filled out before it is processed.***

Mail to:
CHATTANOOGA-HAMILTON COUNTY
AIR POLLUTION CONTROL BUREAU
2034 Hamilton Place Blvd. Suite 300
Chattanooga, TN 37421

Company Official: [signature]

Title: Funeral Director

Date: 5-3-24

DO NOT WRITE BELOW THIS LINE

_____ Engineer Approval

This form corresponds to permit number: _____

Special Notations: _____

10. **Environmental Impact**

Those emissions indicated in Item 9 may at times under normal operating conditions cause (check all that apply):

☐ Odors ☐ Eye Irritations ☐ Property Damage ☐ Health Effects

☐ Other nuisances outside of plant property ☑ No environmental damage

11. **Emission Point Data**

Stack Height (emission point) above ground: _____ Ft. Volume of gas discharged into atmosphere: _____ cfm

Ground Elevation above sea level at stack base: _____ Ft. Gas exit temperature: _____ °F

Stack Diameter: _____ Ft. See Stack Test

12. **Ave. Operating Time**

Daily: 2 hours Weekly: 6 Days Yearly: 52 Weeks

This is to certify that I am familiar with the operations concerning this equipment and that the information provided on this application is true and complete to the best of my knowledge.

[signature]

Company Official

Funeral Director

Title

5-3-24

Date

CHATTANOOGA-HAMILTON COUNTY
AIR POLLUTION CONTROL BUREAU
6125 Preservation Drive, Suite 140
Chattanooga, TN 37416-3740

PROCESS EQUIPMENT APPLICATION

FORM E010
07/2000

1 ***Name of Company*** (as shown on Line 1, Form E001): Covenant Funeral Service, Inc

2. ***Equipment Name*** (as shown on Line 10, Form E001): KMH 1100 · 300

3. ***Installation Date:*** 5-30-24 4 ***Type of Process:*** Cremation

5. ***Major Raw Materials Used:***

6. ***Process Weight:*** 150 - 300 Pounds per hour
This is the total weight of all materials introduced into the process.

7. ***Control Equipment***

- ☐ Emissions Uncontrolled
- ☐ Baghouse (File Form E102)
- ☐ Wet Collecting Device (File Form E103)
- ☐ Inertial Separators (File Form E105)
- ☐ Electrostatic Precipitator (File Form E104)
- ☐ Other – Specify:

8. ***Control Efficiency***

Enter the control efficiency for each pollutant emitted by this equipment (for appropriate Forms E102, E103, E104, E105, E107, or enter zeros if the emissions are uncontrolled as noted in Item 7.

See Stack Test

Pollutant	% Efficiency
Particulates	
SO_x	
NO_x	
CO	
Hydrocarbons	
Other:	

9. ***Emissions Summary***

Enter the amount of each pollutant listed in pounds per hour.

Pollutant	Uncontrolled Emissions (File Form E106)	Actual Emissions (Stack Test Report)	OR	Estimated Emissions (See Formula A)
Total Suspended Particulate				
PM10				
Sulfur Oxides				See Stack Test
Nitrogen Oxides (as NO_2)				
Other (specify)				

Formula A: Estimated Emissions = $\frac{(100\% - \text{Control Efficiency (\%)})}{100\%}$ X Uncontrolled Emissions

7 Emission Point Data:

A.	Stack height above ground:	22	Ft
B.	Ground elevation above sea level at stack base:	1	Ft
C.	Stack Diameter:	2	Ft
D.	Volume of gas discharged into atmosphere:	697	Cfm
E.	Gas exit temperature:	1539	°F

8. Equipment Operation:

Average Operating Time:	Daily:	2	Hours
	Weekly:	6	Days
	Yearly:	52	weeks

This is to certify that I am familiar with the operations concerning this equipment and that the information provided on this application is true and complete to the best of my knowledge. ***This form must be completely filled out before it will be acceptable.***

Mail to:
CHATTANOOGA-HAMILTON COUNTY
AIR POLLUTION CONTROL BUREAU
2034 Hamilton Place Blvd. Suite 300
Chattanooga, TN 37421

Company Official: [signature]

Title: Funeral Director

Date: 5-3-24

DO NOT WRITE BELOW THIS LINE

_____ Engineer Approval

This form corresponds to permit number: _____

Special Notations: _____

BEATTY ENVIRONMENTAL SERVICES, INC.

315 SE 20TH PL, CAPE CORAL, FL 33990
PHONE: (239) 464-1403
EMAIL: BEATTYENVIRONMENTAL12@GMAIL.COM

April 12, 2020

Bud Keller
Keller Manufacturing
4442 Holden Road
Lakeland, Florida

Re: Keller Manufacturing K1100-300 "PLUS"

Dear Mr. Keller,

On April 2, 2020, EPA Methods 1-5 & 10, testing for Particulate Matter & Carbon Monoxide was conducted at Keller Manufacturing located at 4442 Holden Road Lakeland, Florida.

The following emission unit (EU) was tested:

Keller Manufacturing K1100-300 "PLUS"

If you have any questions regarding the report please contact our office as soon as possible.

Sincerely,

Zachary Beatty

Zachary Beatty
Beatty Environmental Services, Inc.

Electronic Copy to: Keller Manufacturing

Source Test Report for Particulate and Carbon Monoxide Emissions

EPA Method 1-5, & 10

Report

20014-ST

Conducted:

April 2, 2020

Prepared for:

Keller Manufaturing

By:

Beatty Environmental Services, Inc.
315 SE 20th Pl
Cape Coral, FL 33990
(239) 246-3646

BEATTY ENVIRONMENTAL SERVICES, INC.

Table of Contents

Section

1.0 Introduction

On April 2, 2020, EPA Methods 1-5 and 10, testing for Particulate Matter (PM), and Carbon Monoxide (CO) emissions were performed on a Keller Manufacturing K1100-300 "PLUS" Unit, located at 4442 Holden Road in Lakeland, Florida.

During the testing period, Bud Keller of Keller Manufacturing maintained a log containing the emission control device and process data. This information is presented, along with the temperature chart, in Attachment C.

The results of this test verify compliance with the rules as set forth by Florida Department of Environmental Protection referenced under CFR Part 62-296.401 for incinerators.

2.0 Certification of Test Results

Facility Tested:	Keller Manufacturing K1100-300 "PLUS" 4442 Holden Road Lakeland, Florida 33811
Type Process:	Human Cremation
Abatement Device:	Afterburner
Report:	20014-ST
Date:	April 2, 2020

Actual Particulate Matter Emissions (gr/dscf @ 7% o2) - 0.0085
Allowable Particulate Emissions (gr/dscf @ 7% o2) - 0.08

Actual Carbon Monoxide (ppm @ 7% o2) - 28.70
Allowable Carbon Monoxide (ppm @ 7% o2) - 100

I hereby certify that to my knowledge, all information and data submitted in this report is true and correct.

Nicholas Decker

Field Manager

3.0 Allowable Emission Determination

The allowable emissions were determined by permit specific conditions.

Substantiating data and calculations are presented in the Appendix D.

4.0 Cyclonic Flow Determination

EPA Method 1

"11.4.1 In most stationary sources, the direction of stack gas flow is essentially parallel to the stack walls. However, cyclonic flow may exist (1) after such devices as cyclones and inertial demisters following venturi scrubbers, or (2) in stacks having tangential inlets or other duct configurations which tend to induce swirling; in these instances, the presence or absence of cyclonic flow at the sampling location must be determined."

Due to the configuration of the system, cyclonic flow was considered to be non-existent at the sampling site.

CYCLONIC FLOW DETERMINATION

EPA Method 1, Section 11.4

FACILITY NAME: *Keller Manufacturing K1100-300 "PLUS"*

REPORT NUMBER *20014-ST*

Facility ID *FID#*

AVERAGE FLOW ANGLE: 0.0

CYCLONIC FLOW: (Yes/No) No

(Note: Average flow angle must be less then 20 degrees)

Date: April 2, 2020

POINT NUMBER	FLOW ANGLE (DEG)	FLOW DIRECTION (PROBE ROTATION TOWARDS) (L, R)
R 1	0.0	-
2	0.0	-
3	0.0	-
4	0.0	-
5	0.0	-
6	0.0	-
7	0.0	-
8	0.0	-
9	0.0	-
10	0.0	-
11	0.0	-
12	0.0	-
1	0.0	-
2	0.0	-
3	0.0	-
4	0.0	-
5	0.0	-
6	0.0	-
7	0.0	-
8	0.0	-
9	0.0	-
10	0.0	-
11	0.0	-
12	0.0	-

Average = 0.0

5.0 Summary of Results
Keller Manufacturing K1100-300 "PLUS"
FID#
20014-ST

	Run 1	Run 2	Run 3	Average
Date	4/2/2020	4/2/2020	4/2/2020	
Process Rate (pounds per hour)	400	400	400	400
Allowable Particulate Emission (gr/dscf @ 7% o2)	0.08	0.08	0.08	0.08
Particulate Emission Rate (gr/dscf @ 7% o2)	0.0032	0.0092	0.0132	0.0085
Allowable Carbon Monoxide Emission (ppm @ 7% o2)	100	100	100	100
Carbon Monoxide Emission Rate (ppm @ 7% o2)	22.40	55.54	8.14	28.70

6.0 Particulate Emission Results
Keller Manufacturing K1100-300 "PLUS"
FID#
20014-ST

	Run 1	Run 2	Run 3
Area (square feet)	2.41	2.41	2.41
Stack Pressure (inches Hg)	30.00	30.00	30.00
Meter Pressure (inches Hg)	30.11	30.10	30.10
Sample Volume (Std. Cu. Ft.)	42.264	39.933	40.737
Water Vapor (Cubic Feet)	4.67	4.66	6.51
Sample Moisture (percent)	9.95	10.44	13.77
Saturation Moisture (percent)	100.00	100.00	100.00
Molecular Weight (lbs/lb Mole wet)	28.55	28.44	28.10
Velocity (fpm)	1296	1305	1458
Volumetric Flow Rate (acfm)	3118	3139	3507
Volumetric Flow Rate (scfm-dry)	1001	936	927
Concentration (gr/dscf)	0.0032	0.0076	0.0114
Concentration@7% O2 (gr/dscf)	0.0032	0.0092	0.0132
Mass Emission Rate (lbs./hr.)	0.03	0.06	0.09
Percent Isokinetic	100.60	101.65	104.77

7.0 Carbon Monoxide Emission Results
Keller Manufacturing K1100-300 "PLUS"
FID#
20014-ST

	Run1	Run 2	Run 3	Average
Date	4/2/2020	4/2/2020	4/2/2020	
Start Time	10:35	13:08	16:10	
Stop Time	11:40	14:12	17:15	
Percent Oxygen	6.99	9.42	8.85	
Carbon Monoxide (PPM)	22.42	45.87	7.06	
Carbon Monoxide Emissions (PPM @ 7% O_2)	22.40	55.54	8.14	28.70
Carbon Monoxide Allowable (PPM@ 7% O_2)	100	100	100	100

10.0 Summary of Field and Laboratory Data
Keller Manufacturing K1100-300 "PLUS"
FID#
20014-ST

	Run 1	Run 2	Run 3
Date	4/2/2020	4/2/2020	4/2/2020
Start Time	10:35	13:08	16:10
Stop Time	11:40	14:12	17:15
CP	0.84	0.84	0.84
Y	0.9923	0.9923	0.9923
^Ha (inches H2O)	1.6548	1.6548	1.6548
Diameter of Nozzle (inches)	0.5553	0.5553	0.5553
Stack Diameter or Equivalent (inches)	21.00	21.00	21.00
Static Pressure (inches H2O)	-0.02	-0.02	-0.02
Barometric Pressure (inches Hg)	30.00	30.00	30.00
Test Time (minutes)	60	60	60
Meter Volume (cubic feet)	43.181	41.060	41.618
Square Root ^P (inches H2O)	0.229	0.222	0.236
Orifice Pressure ^H (inches H2O)	1.511	1.394	1.411
Average Meter Temperature (Deg. F)	78.5	81.8	78.3
Average Stack Temperature (Deg. F)	1023.8	1128.6	1266.7
Particulate Sample Weight (grms)	0.0088	0.0197	0.0302
Water Collected (grms)	99.0	98.7	138.0
Percent CO2	9.0	8.0	8.5
Percent O2	7.0	9.4	8.9
Molecular Weight (lbs/lb Mole)	29.72	29.66	29.71
Nozzle Area (square feet)	0.00168	0.00168	0.00168

Beatty Environmental Services, Inc.

Emission Control Device and Process Data Form

Company: Keller Manufacturing

Installation: Crematory

Type of Installation: Human Crematory

Type of Material Processed: Pig Remains

Type of Fuel Used: Propane

Type of Pollution Control System: Afterburner

General Condition of Control Equipment: New

Run No.	1	2	3
Start Time	10:35	13:08	16:10
Stop Time	11:40	14:12	17:15
Fuel	LPG	LPG	LPG
Date	04/02/2020	04/02/2020	04/02/2020
Pressure Drop(in.H20)	NA	NA	NA
Process Rate	400 lbs	400 lbs	400 lbs
Percent Recycle	NA	NA	NA

Signature: Bud Keller Title: President

Printed Name: Bud Keller Report No. 20014-ST

*By signing above facility designee agrees that all information on this form is true and correct to the best of his/her knowledge.