

May 31, 2023

Mr. Alan Frazier  
Chattanooga-Hamilton County Air Pollution Control Bureau  
6125 Preservation Drive  
Chattanooga, TN 37416-3638

Subject: Roadtec, Inc. - Riverside  
Application for Four (4) Messer Plasma Cutting Systems

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MAY 31 2023

AIR POLLUTION  
CONTROL BUREAU

Dear Mr. Frazier:

Roadtec, Inc. (Roadtec) located at 2909 Riverside Dr. in Chattanooga submits the attached forms for four Messer plasma cutting systems (Messer 7221, 7222, 7223, 7224).

Roadtec cuts steel plate for use in manufacturing using the Messer plasma cutters. Emissions are collected and vented through dust collectors. Uncontrolled emissions were calculated based on maximum hourly usage determined by kerf width, average metal plate thickness, cut speed, and emission of fumes as obtained from "Emission of Fume, Nitrogen Oxides, and Noise in Plasma Cutting of Stainless and Mild Steel" by Broman B. et al. dated March 1994.

Roadtec submitted an application for a Kinetic Plasma Cutter in 2022. This was determined to be insignificant, as the hourly particulate emissions were estimated to be 0.48 pounds per hour. Initially, due to similar operating estimates, these four Messer tables were assumed to also be insignificant. According to the Air Pollution Control Bureau (Bureau) Regulations §4-56(c)(12)(ii), a single stack which does not have potential emissions of more than 0.500 pounds per hour of particulates, provided that the total amounts to less than two (2) pounds per hour is an insignificant activity and is not subject to permitting requirements of §4-56(c)(1)-(9). Because of this, we had planned for one of these machines to be subject to the permitting requirements. However, recent data shows that the potential hourly particulate emissions will exceed 0.500 pounds per hour (lb/hr), due to a higher average plate thickness.

All four Messers have similar operating parameters (operating hours, kerf width, average metal plate thickness, and cut speed), but Messer 7223 and Messer 7224 use oxygen plasma, similar to the Kinetic Plasma Cutter. Based on our calculations, the uncontrolled hourly particulate emissions are <sup>0.750</sup>0.63 pounds per hour for Messer 7221 and Messer 7222, and <sup>0.563</sup>0.47 pounds per hour for Messer 7223 and Messer 7224. These emissions are based on ~~7,300~~ operating hours per year. Astec agrees to limit annual operating hours to ~~7,300~~ hours.

The supporting calculations and application pages are attached.

I certify that the information contained in this application is true, accurate, and complete based on information and belief formed after reasonable inquiry.

If you have any questions concerning the information in this letter or its attachments, please contact me at 706.313.8518 or my consultant, Shea Cofer, at 615.418.1414.



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Omar Rivera  
EHS Manager  
Attachments

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

FORM E001  
03/2011

1. Name of Company Roadtec, Inc. (Riverside)  
*(If corporation or LLC, name on file with Tennessee Secretary of State Corporate Records Division)*
2. NAICS Code: 333120
3. Company Official to Contact: Omar Rivera
4. Phone No. 706.313.8518
5. Mailing Address: 800 Manufacturers Rd. Chattanooga TN 37405  
*Street or P.O. Box City State Zip Code*
6. Physical Location  
(If different from line 5) 2909 Riverside Dr. Chattanooga TN 37406  
*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.: N/A

8. Type of equipment for which application is made:
- |   |   |  |
|---|---|--|
| <input checked="" type="checkbox"/> Process Equipment (Form E010 or Form E010A)   | <input type="checkbox"/> Previously Submitted | <input checked="" type="checkbox"/> Attached |
| <input type="checkbox"/> Fuel Burning Equipment (Form E011)   | <input type="checkbox"/> Previously Submitted | <input type="checkbox"/> Attached            |
| <input type="checkbox"/> Incineration Equipment (Form E012)   | <input type="checkbox"/> Previously Submitted | <input type="checkbox"/> Attached            |
| <input type="checkbox"/> Minor Pollution Source (Form E014)<br><i>(Less than 1000 lbs/yr and less than 10 lbs/day total uncontrolled contaminant emissions)</i> | <input type="checkbox"/> Previously Submitted | <input type="checkbox"/> Attached            |

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The following forms are filed with this application:  
E010, E102, E106

MAY 31 2023

AIR POLLUTION  
CONTROL BUREAU

9. Equipment Name:  
Messer 7221 (Messer Plasma Table)
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): 14.8 lb/hr  
15.0

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  
6125 Preservation Drive, Suite 140  
Chattanooga, TN 37416-3638

GABRIEL ANAYA  
Name  
GRAL MGR  
Title  
5/31/2023  
Date

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

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OR CERTIFICATE OF OPERATION

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CONTROL BUREAU

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Name

GRAL MGT  
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The following forms are filed with this application:  
E010, E102, E106

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MAY 31 2023

9. Equipment Name: Messer 7223 (Messer Plasma-Drill)
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): 14.8 lb/hr  
15.0

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GASZCZAK ANAYA  
Name  
GEAR MGR  
Title  
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- The following forms are filed with this application:  
E010, E102, E106
9. Equipment Name:  
Messer 7224 (Messer Plasma-Drill)
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): 14.8 lb/hr  
15.0

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Name  
GABRIEL MGT  
Title  
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**PROCESS EQUIPMENT APPLICATION**

FORM E010  
07/2000

1. **Name of Company** (as shown on Line 1, Form E001): Roadtec, Inc. (Riverside)
2. **Equipment Name** (as shown on Line 10, Form E001): Messer 7221 (Messer Plasma Table)
3. **Installation Date:** January 2023      4. **Type of Process:** Exhausts outside through dust collector
5. **Major Raw Materials Used:** Various types of carbon steel (i.e., plate steel)
6. **Process Weight:** 14.8 / 5,0 Pounds per hour  
This is the total weight of all materials introduced into the process.

7. **Control Equipment**

<input type="checkbox"/> Emissions Uncontrolled	<input checked="" type="checkbox"/> Baghouse (File Form E102)
<input type="checkbox"/> Wet Collecting Device (File Form E103)	<input type="checkbox"/> Inertial Separators (File Form E105)
<input type="checkbox"/> Electrostatic Precipitator (File Form E104)	<input type="checkbox"/> 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.

Pollutant	% Efficiency
Particulates	99.0%
SO <sub>x</sub>	N/A
NO <sub>x</sub>	N/A
CO	N/A
Hydrocarbons	N/A
Other:	N/A

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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)	Estimated Emissions (See Formula A)
Total Suspended Particulate	0.63 lb/hr	N/A	0.006 lb/hr
PM10	0.63 lb/hr	N/A	0.006 lb/hr
Sulfur Oxides	N/A	N/A	N/A
Nitrogen Oxides (as NO <sub>2</sub> )	N/A	N/A	N/A
Other (specify)	N/A	N/A	N/A

OR

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

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: 13 Ft.      Volume of gas discharged into atmosphere: 4,300 cfm  
Ground Elevation above sea level at stack base: 670 Ft.      Gas exit temperature: 80 °F  
Stack Diameter: 1.0 x 2.0 Ft.      Ambient

12. **Ave. Operating Time**

Daily: 20 hours      Weekly: 7 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.

*JAZ*

Installation Permit No. 6029-30900198-02I

Company Official

*GRAC M62*

Title

*5/21/2023*

Date

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



**AIR POLLUTION CONTROL EQUIPMENT DATA - BAGHOUSE**

**FORM E102  
01/2001**

1. **Name of Company:** Roadtec, Inc. (Riverside)  
*As shown on Line 1 of Form E001*

2. **Name of Equipment:** Messer 7221 (Messer Plasma Table)  
*As shown on Line 9 of Form E001*

3. **Equipment Data:**  
 Manufacturer of Baghouse: Camfil APC  
 Model Number: GSX8 Cost of Baghouse: \_\_\_\_\_  
 Date of Manufacture: September 2022 Date of Installation: January 2023  
 Pre-cleaning Equipment  No  Yes *If yes, what type (File appropriate form for control equipment)* \_\_\_\_\_  
 Volume of gas discharged from baghouse at dry standard conditions: 4,300 dscfm  
 Total cloth area of baghouse: 3,007 ft<sup>2</sup>  
 Air to cloth ratio: 1.43  $\frac{\text{Ft}}{\text{Min}}$  *(Divide volume of gas discharged by total cloth area)*

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4. **Pressure Drop Across Baghouse:**  
 Stated by manufacturer: \_\_\_\_\_ Inches of H<sub>2</sub>O  
 Measured (actual): \_\_\_\_\_ Inches of H<sub>2</sub>O  
 Calculated:  $\frac{\text{_____}}{\text{(K Factor)}} \times \frac{\text{_____}}{\text{Air to cloth ratio in ft/min}} = \text{_____}$  Inches of H<sub>2</sub>O  
 The recommended pressure drop range in inches of H<sub>2</sub>O is 1.5 (minimum) to 8.0 (maximum).  
*If the measured or calculated pressure drop falls outside the recommended range, contact the Chattanooga-Hamilton County Air Pollution Control Bureau.*

MAY 31 2023  
AIR POLLUTION  
CONTROL BUREAU  
Inches of H<sub>2</sub>O

5. **Filter Data:**  
 Type of fabric filters used in baghouse: HemiPleat GSX Cartridge - eXtreme Flame Retardant  
 Operating temperature:  $\frac{<160}{\text{Manufacturer's Recommended}} \text{ } ^\circ\text{F}$   $\frac{\text{Ambient } (\sim 80)}{\text{Normal}} \text{ } ^\circ\text{F}$   $\frac{160}{\text{Maximum}} \text{ } ^\circ\text{F}$   
*If the maximum operating temperature exceeds the recommended operating temperature, contact the Chattanooga-Hamilton County Air Pollution Control Bureau.*

6. **Baghouse Components:**  
*Check all that apply.*  
 Flow rate instrumentation  Inlet gas temperature instrumentation  Evaporative Cooler  
 Dew point indicator  Differential pressure instrumentation  Other (Describe) \_\_\_\_\_  
 Heat Exchanger  Transmissometer \_\_\_\_\_

7. **Baghouse Operation:**  
 Continuous  Intermittent

8. **Baghouse Description:**

Baghouse Inlet (dirty gas):  Bottom Feed  Top Feed

Exterior Filtration  Tangential

Other (Describe): \_\_\_\_\_

Does the baghouse have a wear-resistant plate?  yes  no

Baghouse shape:  Rectangular  Cubical  Cylindrical

Other (Describe): \_\_\_\_\_

Baghouse volume: \_\_\_\_\_ Ft<sup>3</sup>

Baghouse dimensions: \_\_\_\_\_ Ft      \_\_\_\_\_ Ft      \_\_\_\_\_ Ft  
*Length*      *Width*      *height*

Baghouse shell material: \_\_\_\_\_

8. **Bag Cleaning:** (*check one*)

Fabric Flexing      Reverse Air Cleaning

Mechanical Shaking & Rapping       Reverse Jet

Sonic Cleaning       Reverse Flow

Collapse Cleaning       Manual Cleaning

Pulse (pressure) – Jet Cleaning

9. **Filter Configuration:**

Panels       Multiple Tube Bag

Circular Cross-Section Tube  Other (Describe): \_\_\_\_\_

Filter Fabric:  Felted  Woven      Number of Compartments: 2

Filter Area: 3,007 Ft<sup>2</sup>      Number of Filters per Compartment: 4

10. **Particle Size Distribution in Microns (µ):**

Particle Type(s): \_\_\_\_\_ Moisture in gas stream: \_\_\_\_\_ %

Size	0-5µ	5-10µ	10-20µ	20-44µ	Greater than 44µ
% by weight					

11. **Dust Disposal:**

Automatic (screw conveyor, etc.)  Manual (Describe): \_\_\_\_\_

How often are hoppers emptied? Every N/A hours      **Two 55-gallon drums every week**

Name of commercial disposal company (if applicable): N/A

Is disposed material wetted for transport?  Yes  No

Disposal Site: Gerdau

12. **Control Efficiency:**

Manufacturer's Stated Efficiency: 99.0 %

Required Efficiency: N/A %

Operational Efficiency (performance testing): N/A %

Size	0-5 $\mu$	5-10 $\mu$	10-20 $\mu$	20-44 $\mu$	Greater than 44 $\mu$
% by weight					

13. **Fan Data:**

Fan Location:  Clean air side (pull through)  Dirty air side (push through)

Fan Design (check one - A, B, or C):

<b>Fan Type:</b>	<b>Blade Type:</b>
A. <input checked="" type="checkbox"/> Centrifugal (radial flow)	<input checked="" type="checkbox"/> Forward Curve <input type="checkbox"/> Backward Curve <input type="checkbox"/> Straight
B. <input type="checkbox"/> Axial-flow (propeller)	<input type="checkbox"/> Propeller <input type="checkbox"/> Tube Axial <input type="checkbox"/> Vane Axial

Fan Properties:

Diameter: \_\_\_\_\_ Inches      Braking Horsepower: \_\_\_\_\_ BHP  
Speed: \_\_\_\_\_ RPM      Inlet Area: \_\_\_\_\_ Ft<sup>2</sup>  
Volume: \_\_\_\_\_ Cfm @ STP      Outlet Area: \_\_\_\_\_ Ft<sup>2</sup>  
Static Pressure: \_\_\_\_\_ Inches WC      Motor Horsepower: \_\_\_\_\_ HP

Standard       Heavy Duty      Submitted copy of Manufacturer's Multirating Tables  Yes  No

Special Construction Materials:

Bronze Alloys       Aluminum       Stainless Steel       Bisonite

Zinc Chromate Primer       Rubber, Phenolics, Vinyls, or Epoxy Covering

C.  Compressor       Positive Displacement       Dynamic       Reciprocating

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Mail to:  
CHATTANOOGA-HAMILTON  
COUNTY AIR POLLUTION  
CONTROL BUREAU  
6125 Preservation Drive  
Chattanooga, TN 37416

Company Official: \_\_\_\_\_

*Signature*  
G2AK M62

Title: \_\_\_\_\_

Date: 5/31/2023

**Do not write below this line.**

*JA* Engineer Approval      Permit Number: 6029-30900198-02I

Special Notations: \_\_\_\_\_

POLLUTION ESTIMATION FORM

FORM E106  
01/2001

- 1. Name of Company: Roadtec, Inc. (Riverside)  
*As shown on Line 1 of Form E001*
- 2. Equipment Name: Messer 7221 (Messer Plasma Table)  
*As shown on Line 9 of Form E001*
- 3. Type of pollutant for which estimate is made: Particulate (metal dust)

4. Pollution Emission Factor (PEF): \_\_\_\_\_  
*(Give value & units in lbs/ton, lbs/lb, lbs/gal, gr/ft<sup>3</sup>, etc.)*

Source of Emission Factor: \_\_\_\_\_

5. Uncontrolled Pollution Emission Rate:

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

6. Uncontrolled Emission Rate: Please see attached calculation Pounds emitted per hour

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AIR POLLUTION CONTROL BUREAU  
6125 Preservation Drive  
Chattanooga, TN 37416

Company Official: GABRIEL ANAYA

Title: QUAL MGR

Date: 5/31/2023

**DO NOT WRITE BELOW THIS LINE**

JES Engineer Approval

This form corresponds to permit number: 6029-30900198-02I

Special Notations: \_\_\_\_\_

Roadtec, Inc.  
2909 Riverside Drive  
Chattanooga, TN 37406

Messer 7221 Emissions

Operating Estimates<sup>(1)</sup>

Thickness (Average)	1	in
Kerf Width	0.147	in
Cutting Speed	360	in/hr
Cut Length	1,261,440	in
Volume	185,740	in <sup>3</sup>
Mass	52,007	lbs
Control Efficiency	99.00%	

Assumptions:

Time Cutting <sup>(2)</sup>	<del>7,300</del> 8,760	hr
Cutting Time	<del>50</del> 60	min/hr

Unit Conversions:

lb/gram	0.002
cm/in	2.54

Process Emissions

Emission of Fumes <sup>(3)</sup> (lb particulate/lb mild steel removed)	Mild Steel Density (g/cm <sup>3</sup> )	Thickness (in)	Kerf Width (in)	Cutting Speed (in/min)	Cutting Time (min/hr)	Control Efficiency	PM (Unc
							lb/hr
0.05	7.85	1	0.147	6	<del>50.00</del> 60	99.0%	<del>0.63</del> 0.750

Example Calculations/Note:

- Operating estimates are from Kumar Vemuri.
- 7,300 hours is based on 20 hours/day and 365 days/year.
- 3a. Emission of fumes was obtained from "Emission of Fume, Nitrogen Oxides, and Noise in Plasma Cutting of Stainless and Mild Steel" by Broman
- 3b. This particular number is for mild steel and is based on a thickness of 8mm and a cutting speed of 3.5 m/min.
4. Uncontrolled Emission Rate = Emission of Fumes \* (1 - % Reduction) \* Density \* Thickness \* Kerf Width \* Cutting Speed \* Cutting Time \* (1 lb / 45
5. Estimated Emissions = (1 - Control Efficiency) \* Uncontrolled Emission Rate
6. Annual Emissions (tpy) = Emissions (lb/hr) \* 7,300 (hr/yr) / 2,000 (lb/ton)

$$1 \text{ in.} \cdot 0.147 \text{ in.} \cdot 360 \frac{\text{in.}}{\text{hr}} \cdot 7.85 \frac{\text{g}}{\text{cm}^3} \cdot 0.05 \frac{\text{lb}}{\text{lb}} \cdot \frac{1 \text{ lb}}{453.59237 \text{ g}}$$

$$\cdot \left(2.54 \frac{\text{cm}}{\text{in.}}\right)^3 = 0.750404 \text{ lb/hr before control}$$

$$\underline{0.007504 \text{ lb/hr controlled}}$$

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MAY 31 2023  
AIR POLLUTION  
CONTROL BUREAU

**PROCESS EQUIPMENT APPLICATION**

FORM E010  
07/2000

1. **Name of Company** (as shown on Line 1, Form E001): Roadtec, Inc. (Riverside)
2. **Equipment Name** (as shown on Line 10, Form E001): Messer 7222 (Messer Plasma Table)
3. **Installation Date:** February 2023      4. **Type of Process:** Exhausts outside through dust collector
5. **Major Raw Materials Used:** Various types of carbon steel (i.e., plate steel)
6. **Process Weight:** 44.8 15.0 Pounds per hour  
This is the total weight of all materials introduced into the process.

**7. Control Equipment**

<input type="checkbox"/> Emissions Uncontrolled	<input checked="" type="checkbox"/> Baghouse (File Form E102)
<input type="checkbox"/> Wet Collecting Device (File Form E103)	<input type="checkbox"/> Inertial Separators (File Form E105)
<input type="checkbox"/> Electrostatic Precipitator (File Form E104)	<input type="checkbox"/> 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.

Pollutant	% Efficiency
Particulates	99.0%
SO <sub>x</sub>	N/A
NO <sub>x</sub>	N/A
CO	N/A
Hydrocarbons	N/A
Other:	N/A

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**MAY 31 2023**

**AIR POLLUTION CONTROL BUREAU**

**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)		Estimated Emissions (See Formula A)
Total Suspended Particulate	0.63 lb/hr	N/A	OR	0.006 lb/hr
PM10	0.63 lb/hr	N/A		0.006 lb/hr
Sulfur Oxides	N/A	N/A		N/A
Nitrogen Oxides (as NO <sub>2</sub> )	N/A	N/A		N/A
Other (specify)	N/A	N/A		N/A

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

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: 13 Ft.      Volume of gas discharged into atmosphere: 4,300 cfm  
Ground Elevation above sea level at stack base: 670 Ft.      Gas exit temperature: 80 °F  
Stack Diameter: 1.0 x 2.0 Ft.      Ambient

12. **Ave. Operating Time**

Daily: 20 hours      Weekly: 7 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.

*JAS*  
Installation Permit No. 6029-30900198-031

GABRIEL ANAYA  
Company Official

G2AL MG2  
Title

5/31/2022  
Date

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

**AIR POLLUTION CONTROL EQUIPMENT DATA - BAGHOUSE**

**FORM E102  
01/2001**

1. **Name of Company:** Roadtec, Inc. (Riverside)  
*As shown on Line 1 of Form E001*

2. **Name of Equipment:** Messer 7221 (Messer Plasma Table)  
*As shown on Line 9 of Form E001*

3. **Equipment Data:**  
 Manufacturer of Baghouse: Camfil APC  
 Model Number: GSX8 Cost of Baghouse: \_\_\_\_\_  
 Date of Manufacture: September 2022 Date of Installation: February 2023  
 Pre-cleaning Equipment  No  Yes *If yes, what type (File appropriate form for control equipment)*  
 Volume of gas discharged from baghouse at dry standard conditions: 4,300 dscfm  
 Total cloth area of baghouse: 3,007 ft<sup>2</sup>  
 Air to cloth ratio: 1.43  $\frac{\text{Ft}}{\text{Min}}$  *(Divide volume of gas discharged by total cloth area)*

4. **Pressure Drop Across Baghouse:**  
 Stated by manufacturer: \_\_\_\_\_ Inches of H<sub>2</sub>O  
 Measured (actual): \_\_\_\_\_ Inches of H<sub>2</sub>O  
 Calculated: \_\_\_\_\_ X  $\frac{\text{Ft}}{\text{Min}}$  = \_\_\_\_\_ Inches of H<sub>2</sub>O  
(K Factor) Air to cloth ratio in ft/min  
 The recommended pressure drop range in inches of H<sub>2</sub>O is 1.5 (minimum) to 8.0 (maximum).  
*If the measured or calculated pressure drop falls outside the recommended range, contact the Chattanooga-Hamilton County Air Pollution Control Bureau.*

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CONTROL BUREAU

5. **Filter Data:**  
 Type of fabric filters used in baghouse: HemiPleat GSX Cartridge - eXtreme Flame Retardant  
 Operating temperature:  $\frac{<160}{\text{Manufacturer's Recommended}}$  °F  $\frac{\text{Ambient (~80)}}{\text{Normal}}$  °F  $\frac{160}{\text{Maximum}}$  °F  
*If the maximum operating temperature exceeds the recommended operating temperature, contact the Chattanooga-Hamilton County Air Pollution Control Bureau.*

6. **Baghouse Components:**  
*Check all that apply.*  
 Flow rate instrumentation  Inlet gas temperature instrumentation  Evaporative Cooler  
 Dew point indicator  Differential pressure instrumentation  Other (Describe) \_\_\_\_\_  
 Heat Exchanger  Transmissometer \_\_\_\_\_

7. **Baghouse Operation:**  
 Continuous  Intermittent



8. **Baghouse Description:**

Baghouse Inlet (dirty gas):  Bottom Feed  Top Feed

Exterior Filtration  Tangential

Other (Describe): \_\_\_\_\_

Does the baghouse have a wear-resistant plate?  yes  no

Baghouse shape:  Rectangular  Cubical  Cylindrical

Other (Describe): \_\_\_\_\_

Baghouse volume: \_\_\_\_\_ Ft<sup>3</sup>

Baghouse dimensions: \_\_\_\_\_ Ft \_\_\_\_\_ Ft \_\_\_\_\_ Ft

*Length*                      *Width*                      *height*

Baghouse shell material: \_\_\_\_\_

8. **Bag Cleaning:** (*check one*)

<u>Fabric Flexing</u>	<u>Reverse Air Cleaning</u>
<input type="checkbox"/> Mechanical Shaking & Rapping	<input type="checkbox"/> Reverse Jet
<input type="checkbox"/> Sonic Cleaning	<input type="checkbox"/> Reverse Flow
<input type="checkbox"/> Collapse Cleaning	<input type="checkbox"/> Manual Cleaning
<input checked="" type="checkbox"/> Pulse (pressure) – Jet Cleaning	

9. **Filter Configuration:**

Panels  Multiple Tube Bag

Circular Cross-Section Tube  Other (Describe): \_\_\_\_\_

Filter Fabric:  Felted  Woven      Number of Compartments: 2

Filter Area: 3,007 Ft<sup>2</sup>      Number of Filters per Compartment: 4

10. **Particle Size Distribution in Microns ( $\mu$ ):**

Particle Type(s): \_\_\_\_\_ Moisture in gas stream: \_\_\_\_\_ %

Size	0-5 $\mu$	5-10 $\mu$	10-20 $\mu$	20-44 $\mu$	Greater than 44 $\mu$
% by weight					

11. **Dust Disposal:**

Automatic (screw conveyor, etc.)  Manual (Describe): \_\_\_\_\_

How often are hoppers emptied?      Every N/A hours      Two 55-gal drums every week

Name of commercial disposal company (if applicable): N/A

Is disposed material wetted for transport?  Yes  No

Disposal Site: Gerdau

12. **Control Efficiency:**

Manufacturer's Stated Efficiency: 99.0 %

Required Efficiency: N/A %

Operational Efficiency (performance testing): N/A %

Size	0-5 $\mu$	5-10 $\mu$	10-20 $\mu$	20-44 $\mu$	Greater than 44 $\mu$
% by weight					

13. **Fan Data:**

Fan Location:  Clean air side (pull through)  Dirty air side (push through)

Fan Design (check one - A, B, or C):

Fan Type:	Blade Type:
A. <input checked="" type="checkbox"/> Centrifugal (radial flow)	<input checked="" type="checkbox"/> Forward Curve <input type="checkbox"/> Backward Curve <input type="checkbox"/> Straight
B. <input type="checkbox"/> Axial-flow (propeller)	<input type="checkbox"/> Propeller <input type="checkbox"/> Tube Axial <input type="checkbox"/> Vane Axial

Fan Properties:

Diameter: \_\_\_\_\_ Inches      Braking Horsepower: \_\_\_\_\_ BHP  
 Speed: \_\_\_\_\_ RPM      Inlet Area: \_\_\_\_\_ Ft<sup>2</sup>  
 Volume: \_\_\_\_\_ Cfm @ STP      Outlet Area: \_\_\_\_\_ Ft<sup>2</sup>  
 Static Pressure: \_\_\_\_\_ Inches WC      Motor Horsepower: \_\_\_\_\_ HP

Standard       Heavy Duty      Submitted copy of Manufacturer's Multirating Tables  Yes  No

Special Construction Materials:

Bronze Alloys       Aluminum       Stainless Steel       Bisonite

Zinc Chromate Primer       Rubber, Phenolics, Vinyls, or Epoxy Covering

C.  Compressor       Positive Displacement       Dynamic       Reciprocating

*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 processed.***

Mail to:  
 CHATTANOOGA-HAMILTON  
 COUNTY AIR POLLUTION  
 CONTROL BUREAU  
 6125 Preservation Drive  
 Chattanooga, TN 37416

Company Official: \_\_\_\_\_  
*Signature*

Title: GRAC AGZ

Date: 5/31/2023

**Do not write below this line.**

JOB Engineer Approval      Permit Number: 6029-30900198-05I

Special Notations: \_\_\_\_\_

POLLUTION ESTIMATION FORM

FORM E106  
01/2001

- 1. Name of Company: Roadtec, Inc. (Riverside)  
*As shown on Line 1 of Form E001*
- 2. Equipment Name: Messer 7222 (Messer Plasma Table)  
*As shown on Line 9 of Form E001*
- 3. Type of pollutant for which estimate is made: Particulate (metal dust)

4. Pollution Emission Factor (PEF): \_\_\_\_\_  
*(Give value & units in lbs/ton, lbs/lb, lbs/gal, gr/ft<sup>3</sup>, etc.)*

Source of Emission Factor: \_\_\_\_\_

5. Uncontrolled Pollution Emission Rate:

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

6. Uncontrolled Emission Rate: Please see attached calculation 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  
6125 Preservation Drive  
Chattanooga, TN 37416

Company Official: GABRIEL AVAYA

Title: GENERAL MGR

Date: 5/31/2022

**DO NOT WRITE BELOW THIS LINE**

 Engineer Approval

This form corresponds to permit number: 6029-30900198-03E

Special Notations: \_\_\_\_\_

Roadtec, Inc.  
2909 Riverside Drive  
Chattanooga, TN 37406

Messer 7222 Emissions

Operating Estimates<sup>(1)</sup>

Thickness (Average)	1	in
Kerf Width	0.147	in
Cutting Speed	360	in/hr
Cut Length	1,261,440	in
Volume	185,740	in <sup>3</sup>
Mass	52,007	lbs
Control Efficiency	99.00%	

Assumptions:

Time Cutting <sup>(2)</sup>	8,760	hr
	<del>7,300</del>	
Cutting Time	50	min/hr
	60	

Unit Conversions:

lb/gram	0.002
cm/in	2.54

Process Emissions

Emission of Fumes <sup>(3)</sup> (lb particulate/lb mild steel removed)	Mild Steel Density (g/cm <sup>3</sup> )	Thickness (in)	Kerf Width (in)	Cutting Speed (in/min)	Cutting Time (min/hr)	Control Efficiency	PM (Uncontrolled)
							lb/hr
0.05	7.85	1	0.147	6	<del>50</del> 60	99.0%	0.63 0.754

Example Calculations/Note:

- Operating estimates are from Kumar Vemuri.
- 7,300 hours is based on 20 hours/day and 365 days/year.
- 3a. Emission of fumes was obtained from "Emission of Fume, Nitrogen Oxides, and Noise in Plasma Cutting of Stainless and Mild Steel" by Broman
- 3b. This particular number is for mild steel and is based on a thickness of 8mm and a cutting speed of 3.5 m/min.
4. Uncontrolled Emission Rate = Emission of Fumes \* (1 - % Reduction) \* Density \* Thickness \* Kerf Width \* Cutting Speed \* Cutting Time \* (1 lb / 45)
5. Estimated Emissions = (1 - Control Efficiency) \* Uncontrolled Emission Rate
6. Annual Emissions (tpy) = Emissions (lb/hr) \* 7,300 (hr/yr) / 2,000 (lb/ton)

$$1 \text{ in.} \cdot 0.147 \text{ in.} \cdot 360 \frac{\text{in.}}{\text{hr}} \cdot 7.85 \frac{\text{g}}{\text{cm}^3} \cdot 0.05 \frac{\text{lb}}{\text{lb}} \cdot \frac{1 \text{ lb}}{453.59237 \text{ g}}$$

$$\cdot \left(2.54 \frac{\text{cm}}{\text{in.}}\right)^3 = 0.750404 \text{ lb/hr before control}$$

$$\underline{0.007504 \text{ lb/hr controlled}}$$

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AIR POLLUTION  
CONTROL BUREAU

**PROCESS EQUIPMENT APPLICATION**

FORM E010  
07/2000

1. **Name of Company** (as shown on Line 1, Form E001): Roadtec, Inc. (Riverside)
2. **Equipment Name** (as shown on Line 10, Form E001): Messer 7223 (Messer Plasma-Drill)
3. **Installation Date:** April 2023      4. **Type of Process:** Exhausts outside through dust collector
5. **Major Raw Materials Used:** Various types of carbon steel (i.e., plate steel)
6. **Process Weight:** 14.8 15.0 Pounds per hour  
This is the total weight of all materials introduced into the process.

**7. Control Equipment**

<input type="checkbox"/> Emissions Uncontrolled	<input checked="" type="checkbox"/> Baghouse (File Form E102)
<input type="checkbox"/> Wet Collecting Device (File Form E103)	<input type="checkbox"/> Inertial Separators (File Form E105)
<input type="checkbox"/> Electrostatic Precipitator (File Form E104)	<input type="checkbox"/> 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.

Pollutant	% Efficiency
Particulates	99.0%
SO <sub>x</sub>	N/A
NO <sub>x</sub>	N/A
CO	N/A
Hydrocarbons	N/A
Other:	N/A

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**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)	Estimated Emissions (See Formula A)
Total Suspended Particulate	0.47 lb/hr	N/A	0.005 lb/hr
PM10	0.47 lb/hr	N/A	0.005 lb/hr
Sulfur Oxides	N/A	N/A	N/A
Nitrogen Oxides (as NO <sub>2</sub> )	N/A	N/A	N/A
Other (specify)	N/A	N/A	N/A

OR

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

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:	<u>14</u> Ft.	Volume of gas discharged into atmosphere:	<u>4,000</u> cfm
Ground Elevation above sea level at stack base:	<u>670</u> Ft.	Gas exit temperature:	<u>80</u> °F
Stack Diameter:	<u>1.0 x 1.5</u> Ft.		<u>Ambient</u>

12. **Ave. Operating Time**

Daily: 20 hours      Weekly: 7 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.

*JAG*  
Installation Permit No. 6029-30900198-04I

GABRIEL ANAYA

Company Official

GRAL MGR

Title

5/31/2023

Date

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

**AIR POLLUTION CONTROL EQUIPMENT DATA - BAGHOUSE**

**FORM E102  
01/2001**

1. **Name of Company:** Roadtec, Inc. (Riverside)  
*As shown on Line 1 of Form E001*

2. **Name of Equipment:** Messer 7223 (Messer Plasma-Drill)  
*As shown on Line 9 of Form E001*

3. **Equipment Data:**  
 Manufacturer of Baghouse: Camfil APC  
 Model Number: GSX16 Cost of Baghouse: \_\_\_\_\_  
 Date of Manufacture: December 2022 Date of Installation: April 2023  
 Pre-cleaning Equipment  No  Yes \_\_\_\_\_  
*If yes, what type (File appropriate form for control equipment)*  
 Volume of gas discharged from baghouse at dry standard conditions: 4,000 dscfm  
 Total cloth area of baghouse: 5,970 ft<sup>2</sup>  
 Air to cloth ratio: 0.67  $\frac{\text{Ft}}{\text{Min}}$  (Divide volume of gas discharged by total cloth area)

4. **Pressure Drop Across Baghouse:**  
 Stated by manufacturer: \_\_\_\_\_ Inches of H<sub>2</sub>O  
 Measured (actual): \_\_\_\_\_ Inches of H<sub>2</sub>O  
 Calculated: \_\_\_\_\_ X \_\_\_\_\_ = \_\_\_\_\_ Inches of H<sub>2</sub>O  
*(K Factor) Air to cloth ratio in ft/min*  
 The recommended pressure drop range in inches of H<sub>2</sub>O is 1.5 (minimum) to 8.0 (maximum).  
*If the measured or calculated pressure drop falls outside the recommended range, contact the Chattanooga-Hamilton County Air Pollution Control Bureau.*

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AIR POLLUTION CONTROL BUREAU

5. **Filter Data:**  
 Type of fabric filters used in baghouse: HemiPleat GSX Cartridge - eXtreme Flame Retardant  
 Operating temperature:  $\frac{<160}{\text{Manufacturer's Recommended}}$  °F  $\frac{\text{Ambient (~80)}}{\text{Normal}}$  °F  $\frac{160}{\text{Maximum}}$  °F  
*If the maximum operating temperature exceeds the recommended operating temperature, contact the Chattanooga-Hamilton County Air Pollution Control Bureau.*

6. **Baghouse Components:**  
*Check all that apply.*  
 Flow rate instrumentation  Inlet gas temperature instrumentation  Evaporative Cooler  
 Dew point indicator  Differential pressure instrumentation  Other (Describe) \_\_\_\_\_  
 Heat Exchanger  Transmissometer \_\_\_\_\_

7. **Baghouse Operation:**  
 Continuous  Intermittent

8. **Baghouse Description:**

Baghouse Inlet (dirty gas):  Bottom Feed  Top Feed

Exterior Filtration  Tangential

Other (Describe): \_\_\_\_\_

Does the baghouse have a wear-resistant plate?  yes  no

Baghouse shape:  Rectangular  Cubical  Cylindrical

Other (Describe): \_\_\_\_\_

Baghouse volume: \_\_\_\_\_ Ft<sup>3</sup>

Baghouse dimensions: \_\_\_\_\_ Ft \_\_\_\_\_ Ft \_\_\_\_\_ Ft

*Length* *Width* *height*

Baghouse shell material: \_\_\_\_\_

8. **Bag Cleaning:** *(check one)*

Fabric Flexing Reverse Air Cleaning

Mechanical Shaking & Rapping  Reverse Jet

Sonic Cleaning  Reverse Flow

Collapse Cleaning  Manual Cleaning

Pulse (pressure) – Jet Cleaning

9. **Filter Configuration:**

Panels  Multiple Tube Bag

Circular Cross-Section Tube  Other (Describe): \_\_\_\_\_

Filter Fabric:  Felted  Woven Number of Compartments: 2

Filter Area: 5,970 Ft<sup>2</sup> Number of Filters per Compartment: 8

10. **Particle Size Distribution in Microns (μ):**

Particle Type(s): \_\_\_\_\_ Moisture in gas stream: \_\_\_\_\_ %

Size	0-5μ	5-10μ	10-20μ	20-44μ	Greater than 44μ
% by weight					

11. **Dust Disposal:**

Automatic (screw conveyor, etc.)  Manual (Describe): \_\_\_\_\_

How often are hoppers emptied? Every N/A hours **Two (2) 55-gal drums every week**

Name of commercial disposal company (if applicable): N/A

Is disposed material wetted for transport?  Yes  No

Disposal Site: Gerdau



12. **Control Efficiency:**

Manufacturer's Stated Efficiency: 99.0 %

Required Efficiency: N/A %

Operational Efficiency (performance testing): N/A %

Size	0-5 $\mu$	5-10 $\mu$	10-20 $\mu$	20-44 $\mu$	Greater than 44 $\mu$
% by weight					

13. **Fan Data:**

Fan Location:  Clean air side (pull through)  Dirty air side (push through)

Fan Design (check one - A, B, or C):

<b>Fan Type:</b>	<b>Blade Type:</b>
A. <input checked="" type="checkbox"/> Centrifugal (radial flow)	<input checked="" type="checkbox"/> Forward Curve <input type="checkbox"/> Backward Curve <input type="checkbox"/> Straight
B. <input type="checkbox"/> Axial-flow (propeller)	<input type="checkbox"/> Propeller <input type="checkbox"/> Tube Axial <input type="checkbox"/> Vane Axial

**Fan Properties:**

Diameter: \_\_\_\_\_ Inches      Braking Horsepower: \_\_\_\_\_ BHP  
 Speed: \_\_\_\_\_ RPM      Inlet Area: \_\_\_\_\_ Ft<sup>2</sup>  
 Volume: \_\_\_\_\_ Cfm @ STP      Outlet Area: \_\_\_\_\_ Ft<sup>2</sup>  
 Static Pressure: \_\_\_\_\_ Inches WC      Motor Horsepower: \_\_\_\_\_ HP

Standard       Heavy Duty      Submitted copy of Manufacturer's Multirating Tables  Yes  No

**Special Construction Materials:**

Bronze Alloys       Aluminum       Stainless Steel       Bisonite

Zinc Chromate Primer       Rubber, Phenolics, Vinyls, or Epoxy Covering

C.  Compressor       Positive Displacement       Dynamic       Reciprocating

*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 processed.***

Mail to:  
 CHATTANOOGA-HAMILTON  
 COUNTY AIR POLLUTION  
 CONTROL BUREAU  
 6125 Preservation Drive  
 Chattanooga, TN 37416

Company Official: GAZZIEL ANAYA  
 Signature

Title: G2AL M62

Date: 5/31/2023

**Do not write below this line.**



Engineer Approval

Permit Number:

6029-30900198-04-I

Special Notations:

\_\_\_\_\_

\_\_\_\_\_

POLLUTION ESTIMATION FORM

FORM E106  
01/2001

- 1. Name of Company: Roadtec, Inc. (Riverside)  
*As shown on Line 1 of Form E001*
- 2. Equipment Name: Messer 7223 (Messer Plasma-Drill)  
*As shown on Line 9 of Form E001*
- 3. Type of pollutant for which estimate is made: Particulate (metal dust)

4. Pollution Emission Factor (PEF): \_\_\_\_\_  
*(Give value & units in lbs/ton, lbs/lb, lbs/gal, gr/ft<sup>3</sup>, etc.)*

Source of Emission Factor: \_\_\_\_\_

5. Uncontrolled Pollution Emission Rate:

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

6. Uncontrolled Emission Rate: \_\_\_\_\_ Please see attached calculation \_\_\_\_\_ 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  
6125 Preservation Drive  
Chattanooga, TN 37416

Company Official: GABRIEL ANAYA

Title: GAZAL M62

Date: 5/31/2023

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CHATT / HAMILTON CO.

**DO NOT WRITE BELOW THIS LINE**

[Signature] Engineer Approval

MAY 31 2023

This form corresponds to permit number: 6029-30900198-04I

AIR POLLUTION  
CONTROL BUREAU

Special Notations: \_\_\_\_\_

Roadtec, Inc.  
 2909 Riverside Drive  
 Chattanooga, TN 37406

Messer 7223 Emissions

Operating Estimates<sup>(1)</sup>

Thickness (Average)	1	in
Kerf Width	0.147	in
Cutting Speed	360	in/hr
Cut Length	1,261,440	in
Volume	185,740	in <sup>3</sup>
Mass	52,007	lbs
Control Efficiency	99.00%	

Assumptions:

Time Cutting <sup>(2)</sup>	<del>7,300</del> 8,760	hr
Cutting Time	<del>50</del> 60	min/hr

Unit Conversions:

lb/gram	0.002
cm/in	2.54

Process Emissions

Emission of Fumes <sup>(3)</sup> (lb particulate/lb mild steel removed)	Oxygen Plasma Reduction <sup>(4)</sup> (%)	Mild Steel Density (g/cm <sup>3</sup> )	Thickness (in)	Kerf Width (in)	Cutting Speed (in/min)	Cutting Time (min/hr)	Control Efficiency
0.05	25%	7.85	1	0.147	6	<del>50</del> 60	99.0%

Example Calculations/Note:

- Operating estimates are from Kumar Vemuri.
- 7,300 hours is based on 20 hours/day and 365 days/year.
- Emission of fumes was obtained from "Emission of Fume, Nitrogen Oxides, and Noise in Plasma Cutting of Stainless and Mild Steel" by Broman B. et al, M
- This particular number is for mild steel and is based on a thickness of 8mm and a cutting speed of 3.5 m/min.
- Using oxygen as the plasma gas reduces emissions by 25%.
- Uncontrolled Emission Rate = Emission of Fumes \* (1 - % Reduction) \* Density \* Thickness \* Kerf Width \* Cutting Speed \* Cutting Time \* (1 lb / 453.59237 g)
- Estimated Emissions = (1 - Control Efficiency) \* Uncontrolled Emission Rate
- Annual Emissions (tpy) = Emissions (lb/hr) \* 7,300 (hr/yr) / 2,000 (lb/ton)

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$$1 \text{ in.} \cdot 0.147 \text{ in.} \cdot 360 \frac{\text{in.}}{\text{hr}} \cdot 7.85 \frac{\text{g}}{\text{cm}^3} \cdot 0.05 \frac{\text{lb}}{\text{lb}} \cdot 0.75$$

$$\cdot \frac{1 \text{ lb}}{453.59237 \text{ g}} \cdot \left(2.54 \frac{\text{cm}}{\text{in.}}\right)^3 = 0.562803 \text{ lb/hr}$$

before control

$$0.005628 \text{ lb/hr controlled}$$

**PROCESS EQUIPMENT APPLICATION**

FORM E010  
07/2000

1. **Name of Company** (as shown on Line 1, Form E001): Roadtec, Inc. (Riverside)
2. **Equipment Name** (as shown on Line 10, Form E001): Messer 7224 (Messer Plasma-Drill)
3. **Installation Date:** May 2023      4. **Type of Process:** Exhausts outside through dust collector
5. **Major Raw Materials Used:** Various types of carbon steel (i.e., plate steel)
6. **Process Weight:** 14.8 / 5.0 Pounds per hour  
This is the total weight of all materials introduced into the process.

7. **Control Equipment**

<input type="checkbox"/> Emissions Uncontrolled	<input checked="" type="checkbox"/> Baghouse (File Form E102)
<input type="checkbox"/> Wet Collecting Device (File Form E103)	<input type="checkbox"/> Inertial Separators (File Form E105)
<input type="checkbox"/> Electrostatic Precipitator (File Form E104)	<input type="checkbox"/> 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.

Pollutant	% Efficiency
Particulates	99.0%
SO <sub>x</sub>	N/A
NO <sub>x</sub>	N/A
CO	N/A
Hydrocarbons	N/A
Other:	N/A

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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)	Estimated Emissions (See Formula A)
Total Suspended Particulate	0.47 lb/hr	N/A	0.005 lb/hr
PM10	0.47 lb/hr	N/A	0.005 lb/hr
Sulfur Oxides	N/A	N/A	N/A
Nitrogen Oxides (as NO <sub>2</sub> )	N/A	N/A	N/A
Other (specify)	N/A	N/A	N/A

OR

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

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: 14 Ft.      Volume of gas discharged into atmosphere: 4,000 cfm  
Ground Elevation above sea level at stack base: 670 Ft.      Gas exit temperature: 80 °F  
Stack Diameter: 1.0 x 1.5 Ft.      Ambient

12. **Ave. Operating Time**

Daily: 20 hours      Weekly: 7 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.

*JAS*  
Installation Permit No. 6029-30900198-05I

GABRIEL ANAYA  
Company Official

GRAC MGT  
Title

5/31/2023  
Date

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

**AIR POLLUTION CONTROL EQUIPMENT DATA - BAGHOUSE**

**FORM E102  
01/2001**

1. **Name of Company:** Roadtec, Inc. (Riverside)  
*As shown on Line 1 of Form E001*

2. **Name of Equipment:** Messer 7224 (Messer Plasma-Drill)  
*As shown on Line 9 of Form E001*

3. **Equipment Data:**  
 Manufacturer of Baghouse: Camfil APC  
 Model Number: GSX16 Cost of Baghouse: \_\_\_\_\_  
 Date of Manufacture: December 2022 Date of Installation: May 2023  
 Pre-cleaning Equipment  No  Yes \_\_\_\_\_  
*If yes, what type (File appropriate form for control equipment)*  
 Volume of gas discharged from baghouse at dry standard conditions: 4,000 dscfm  
 Total cloth area of baghouse: 5,970 ft<sup>2</sup>  
 Air to cloth ratio: 0.67  $\frac{\text{Ft}}{\text{Min}}$  (Divide volume of gas discharged by total cloth area)

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4. **Pressure Drop Across Baghouse:**  
 Stated by manufacturer: \_\_\_\_\_ Inches of H<sub>2</sub>O  
 Measured (actual): \_\_\_\_\_ Inches of H<sub>2</sub>O  
 Calculated:  $\frac{\text{_____}}{\text{(K Factor)}} \times \frac{\text{_____}}{\text{Air to cloth ratio in ft/min}} = \text{_____}$  Inches of H<sub>2</sub>O  
 The recommended pressure drop range in inches of H<sub>2</sub>O is 1.5 (minimum) to 8.0 (maximum).  
*If the measured or calculated pressure drop falls outside the recommended range, contact the Chattanooga-Hamilton County Air Pollution Control Bureau.*

MAY 31 2023  
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5. **Filter Data:**  
 Type of fabric filters used in baghouse: HemiPleat GSX Cartridge - eXtreme Flame Retardant  
 Operating temperature:  $\frac{<160}{\text{Manufacturer's Recommended}} \text{ } ^\circ\text{F}$   $\frac{\text{Ambient } (\sim 80)}{\text{Normal}} \text{ } ^\circ\text{F}$   $\frac{160}{\text{Maximum}} \text{ } ^\circ\text{F}$   
*If the maximum operating temperature exceeds the recommended operating temperature, contact the Chattanooga-Hamilton County Air Pollution Control Bureau.*

6. **Baghouse Components:**  
*Check all that apply.*  
 Flow rate instrumentation  Inlet gas temperature instrumentation  Evaporative Cooler  
 Dew point indicator  Differential pressure instrumentation  Other (Describe) \_\_\_\_\_  
 Heat Exchanger  Transmissometer \_\_\_\_\_

7. **Baghouse Operation:**  
 Continuous  Intermittent

8. **Baghouse Description:**  
 Baghouse Inlet (dirty gas):  Bottom Feed  Top Feed  
 Exterior Filtration  Tangential  
 Other (Describe): \_\_\_\_\_

Does the baghouse have a wear-resistant plate?  yes  no

Baghouse shape:  Rectangular  Cubical  Cylindrical  
 Other (Describe): \_\_\_\_\_

Baghouse volume: \_\_\_\_\_ Ft<sup>3</sup>

Baghouse dimensions: \_\_\_\_\_ Ft \_\_\_\_\_ Ft \_\_\_\_\_ Ft  
*Length Width height*

Baghouse shell material: \_\_\_\_\_

8. **Bag Cleaning:** (check one)  
Fabric Flexing Reverse Air Cleaning

Mechanical Shaking & Rapping  Reverse Jet  
 Sonic Cleaning  Reverse Flow  
 Collapse Cleaning  Manual Cleaning  
 Pulse (pressure) – Jet Cleaning

9. **Filter Configuration:**  
 Panels  Multiple Tube Bag  
 Circular Cross-Section Tube  Other (Describe): \_\_\_\_\_

Filter Fabric:  Felted  Woven Number of Compartments: 2  
 Filter Area: 5,970 Ft<sup>2</sup> Number of Filters per Compartment: 8

10. **Particle Size Distribution in Microns ( $\mu$ ):**  
 Particle Type(s): \_\_\_\_\_ Moisture in gas stream: \_\_\_\_\_ %

Size	0-5 $\mu$	5-10 $\mu$	10-20 $\mu$	20-44 $\mu$	Greater than 44 $\mu$
% by weight					

11. **Dust Disposal:**  
 Automatic (screw conveyor, etc.)  Manual (Describe): \_\_\_\_\_

How often are hoppers emptied? Every N/A hours **Two (2) 55-gal drums every week**

Name of commercial disposal company (if applicable): N/A

Is disposed material wetted for transport?  Yes  No

Disposal Site: Gerdau

12. **Control Efficiency:**

Manufacturer's Stated Efficiency: 99.0 %

Required Efficiency: N/A %

Operational Efficiency (performance testing): N/A %

Size	0-5 $\mu$	5-10 $\mu$	10-20 $\mu$	20-44 $\mu$	Greater than 44 $\mu$
% by weight					

13. **Fan Data:**

Fan Location:  Clean air side (pull through)  Dirty air side (push through)

Fan Design (check one - A, B, or C):

<b>Fan Type:</b>	<b>Blade Type:</b>
A. <input checked="" type="checkbox"/> Centrifugal (radial flow)	<input checked="" type="checkbox"/> Forward Curve <input type="checkbox"/> Backward Curve <input type="checkbox"/> Straight
B. <input type="checkbox"/> Axial-flow (propeller)	<input type="checkbox"/> Propeller <input type="checkbox"/> Tube Axial <input type="checkbox"/> Vane Axial

**Fan Properties:**

Diameter: \_\_\_\_\_ Inches      Braking Horsepower: \_\_\_\_\_ BHP  
 Speed: \_\_\_\_\_ RPM      Inlet Area: \_\_\_\_\_ Ft<sup>2</sup>  
 Volume: \_\_\_\_\_ Cfm @ STP      Outlet Area: \_\_\_\_\_ Ft<sup>2</sup>  
 Static Pressure: \_\_\_\_\_ Inches WC      Motor Horsepower: \_\_\_\_\_ HP

Standard       Heavy Duty      Submitted copy of Manufacturer's Multirating Tables  Yes  No

**Special Construction Materials:**

Bronze Alloys       Aluminum       Stainless Steel       Bisonite

Zinc Chromate Primer       Rubber, Phenolics, Vinyls, or Epoxy Covering

C.  Compressor       Positive Displacement       Dynamic       Reciprocating

*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 processed.***

Mail to:  
 CHATTANOOGA-HAMILTON  
 COUNTY AIR POLLUTION  
 CONTROL BUREAU  
 6125 Preservation Drive  
 Chattanooga, TN 37416

Company Official: GABRIEL AWAYA  
*Signature*

Title: GZAL M62

Date: 5/31/2023

**Do not write below this line.**



Engineer Approval

Permit Number:

6029-30900198-05I

Special Notations:

\_\_\_\_\_



POLLUTION ESTIMATION FORM

FORM E106  
01/2001

- 1. Name of Company: Roadtec, Inc. (Riverside)  
*As shown on Line 1 of Form E001*
- 2. Equipment Name: Messer 7224 (Messer Plasma-Drill)  
*As shown on Line 9 of Form E001*
- 3. Type of pollutant for which estimate is made: Particulate (metal dust)

4. Pollution Emission Factor (PEF): \_\_\_\_\_  
*(Give value & units in lbs/ton, lbs/lb, lbs/gal, gr/ft<sup>3</sup>, etc.)*

Source of Emission Factor: \_\_\_\_\_

5. Uncontrolled Pollution Emission Rate:

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

6. Uncontrolled Emission Rate: Please see attached calculation 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  
6125 Preservation Drive  
Chattanooga, TN 37416

Company Official: GABRIEL ANAYA

Title: GRAL MGZ

Date: 5/31/2023  
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**DO NOT WRITE BELOW THIS LINE**

**MAY 31 2023**

[Signature] Engineer Approval

AIR POLLUTION  
CONTROL BUREAU

This form corresponds to permit number: 6029-30900198-05-I

Special Notations: \_\_\_\_\_

Roadtec, Inc.  
 2909 Riverside Drive  
 Chattanooga, TN 37406

Messer 7224 Emissions

Operating Estimates<sup>(1)</sup>

Thickness (Average)	1	in
Kerf Width	0.147	in
Cutting Speed	360	in/hr
Cut Length	1,261,440	in
Volume	185,740	in <sup>3</sup>
Mass	52,007	lbs
Control Efficiency	99.00%	

Assumptions:

Time Cutting <sup>(2)</sup>	8,760	hr
	<del>7,300</del>	
Cutting Time	50	min/hr
	60	

Unit Conversions:

lb/gram	0.002
cm/in	2.54

Process Emissions

Emission of Fumes <sup>(3)</sup> (lb particulate/lb mild steel removed)	Oxygen Plasma Reduction <sup>(4)</sup> (%)	Mild Steel Density (g/cm <sup>3</sup> )	Thickness (in)	Kerf Width (in)	Cutting Speed (in/min)	Cutting Time (min/hr)	Control Efficiency
0.05	25%	7.85	1	0.147	6	<del>50</del>	99.0%

60  
 0.563 lb/hr  
 uncontrolled

Example Calculations/Note:

- Operating estimates are from Kumar Vemuri.
- 7,300 hours is based on 20 hours/day and 365 days/year.
- Emission of fumes was obtained from "Emission of Fume, Nitrogen Oxides, and Noise in Plasma Cutting of Stainless and Mild Steel" by Broman B. et al, M
- This particular number is for mild steel and is based on a thickness of 8mm and a cutting speed of 3.5 m/min.
- Using oxygen as the plasma gas reduces emissions by 25%.
- Uncontrolled Emission Rate = Emission of Fumes \* (1 - % Reduction) \* Density \* Thickness \* Kerf Width \* Cutting Speed \* Cutting Time \* (1 lb / 453.59237 g)
- Estimated Emissions = (1 - Control Efficiency) \* Uncontrolled Emission Rate
- Annual Emissions (tpy) = Emissions (lb/hr) \* 7,300 (hr/yr) / 2,000 (lb/ton)

$$1 \text{ in.} \cdot 0.147 \text{ in.} \cdot 360 \frac{\text{in.}}{\text{hr}} \cdot 7.85 \frac{\text{g}}{\text{cm}^3} \cdot 0.05 \frac{\text{lb}}{\text{lb}} \cdot 0.75$$

$$\cdot \frac{1 \text{ lb}}{453.59237 \text{ g}} \cdot \left( 2.54 \frac{\text{cm}}{\text{in.}} \right)^3 = 0.562803 \text{ lb/hr}$$

before control

0.005628 lb/hr controlled

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