

From: [Air.Pollution Control](#)
To: [APC Permitting](#)
Subject: FW: Title V Construction Permit Application for JLG Industries, Inc. Facility ID 45-0188
Date: Friday, September 1, 2023 11:14:26 AM
Attachments: [JLG - Jefferson City Construction Permit Application 08-31-2023.pdf](#)

From: Michael Zeiders <mzeiders@libertyenviro.com>
Sent: Friday, September 1, 2023 10:23 AM
To: Air.Pollution Control <Air.Pollution.Control@tn.gov>
Cc: 'Jason M. Sharpe - Unit #1 Management' <jmsharpe@jlg.com>; Shawn Auth <Shawn.Auth@tn.gov>
Subject: [EXTERNAL] Title V Construction Permit Application for JLG Industries, Inc. Facility ID 45-0188

***** This is an EXTERNAL email. Please exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email - STS-Security. *****

Dear Sirs:

JLG Industries, Inc. (JLG) is a manufacturer of aerial lift equipment and operates a manufacturing facility located at 1400 Flat Gap Road in Jefferson City, Fulton County, Tennessee. JLG is submitting this air quality construction permit application for new abrasive blasting and surface coating operations to be installed at the facility.

The primary pollutants from the surface coating operations are volatile organic compounds (VOCs) with a small hazardous air pollutant (HAP) component. Potential VOC emissions from the proposed operations will be more than 100 tons per year (tpy) but less than 250 tpy and potential HAP emissions are less than 10 tons of any one HAP and 25 tons of all HAPs combined. Because potential VOC emissions are >100 tpy, Title V construction application forms are provided.

The construction permit application forms are included as Attachment A of this application with detailed source information provided in Attachment B. A process flow diagram including source/stack alignment is provided in Attachment C. Emissions estimation are provided in Attachment D of this application and supporting SDS information is provided in Attachment E. Detailed equipment specifications are included in Attachment F. A check in the amount of \$2,000 for the application fee will follow with a copy of the attached application's cover letter.

The primary point of contact for JLG is U.S Pipe is Mr. Jason Sharpe. His contact information follows below:

Jason Sharpe
Principal Environmental Engineer
JLG Industries, Inc.
1 JLG Drive

McConnellsburg, PA 17233

C: 717-860-2755

O: 717-485-6423

jmsharpe@jlg.com

Please call or email with any questions.

Sincerely,

Michael D. Zeiders | Project Manager | mzeiders@libertyenviro.com | 610.375.9301

LIBERTY ENVIRONMENTAL, INC. | www.libertyenviro.com

Reading: 505 Penn Street, Suite 400 Reading PA 19601 **610.375.9301**

Lancaster: 315 West James Street, Suite 205, Lancaster, PA 17603 **717.517.5000**

Philadelphia: Three Westlakes, 1055 Westlakes Drive, 3rd Floor, Berwyn, PA 19312 **610.727.3848**

New York City: 600 Third Avenue, Second Floor, New York, NY 10016 **212.255.0374**

Air Quality|Natural & Water Resources|Regulatory Compliance|Site Assessment & Remediation

August 31, 2023

Certified Mail, Return Receipt Requested

Tennessee Department of Environment and Conservation
Division of Air Pollution Control.
William R. Snodgrass Tennessee Tower, 15th Floor
312 Rosa L. Parks Avenue
Nashville, TN 37243

**Re: Title V Construction Permit Application for JLG Industries, Inc. –
Abrasive Blast and Surface Coating Operations
Facility ID 45-0188
Jefferson City, Tennessee**

Dear Madam/Sir:

JLG Industries, Inc. (JLG) is a manufacturer of aerial lift and telescopic material handling equipment with plans to operate a manufacturing facility located at 1400 Flat Gap Road in Jefferson City, Jefferson County, Tennessee. JLG is submitting this air quality construction permit application for new abrasive blasting and surface coating operations to be installed at the facility.

The primary pollutants from the surface coating operations are volatile organic compounds (VOCs) with a small hazardous air pollutant (HAP) component. Potential VOC emissions from the proposed operations will be more than 100 tons per year (tpy) but less than 250 tpy and potential HAP emissions are less than 10 tons of any one HAP and 25 tons of all HAPs combined. Because potential VOC emissions are >100 tpy, Title V construction application forms are provided.

Project Description

JLG currently assembles a small number of telescopic material handlers (TMH) at the Jefferson City facility. The facility currently includes welding operations, surface coating (aerosol cans / paint brush) and rust inhibitor/coolant usage that have each been deemed by the Tennessee Department of Environment and Conservation (TDEC) to be an “insignificant activity or insignificant emissions unit, as defined in 1200-03-09-.04(2)(a)3.”

JLG plans to produce a larger number of TMH at the Jefferson City facility. Operations will include fabrication, welding, abrasive blasting, washing, surface coating, and assembly. Frames and booms will be painted on a single conveyORIZED paint line. The paint line will consist of an abrasive blast booth followed by a six-station pretreatment wash operation, a moisture drying oven followed by a primer spray booth, a topcoat spray booth, and a coating curing oven. Following the surface coating operations, the coated components will be assembled into complete material handlers. A stand-alone touchup spray booth will be used for final TMH touch up operations.

The blast booth will be equipped with a fabric filter and the three (3) spray booths will each be equipped with paint arrestor filters. Surface coatings will be applied using high volume low pressure (HVLP) guns, or equivalent. Process heat (e.g., wash water heaters, ovens, booth air make-up units) will be provided by natural gas-fired units. The facility also operates an existing natural gas-fired emergency generator as well as several natural gas-fired heating units for comfort heat.

The construction permit application forms are included as Attachment A of this application with detailed source information provided in Attachment B. A process flow diagram including source/stack alignment is provided in Attachment C. Emissions estimates are provided in Attachment D of this application, and supporting SDS information is provided in Attachment E. Detailed equipment specifications are included in Attachment F

Regulatory Analysis

Title V Requirements

The JLG Jefferson City facility will be classified as a “Title V facility” because potential VOC emissions exceed the 100 tpy major source threshold. Title V construction permit forms are provided in Attachment A. Per Tennessee guidance, JLG will submit a Title V operating permit application upon commencing operation.

New Source Performance Standards

The federal New Source Performance Standards (NSPS) at 40 CFR Part 60 apply to new, modified, or reconstructed sources in certain listed source categories. None of the NSPS standards are applicable to JLG’s surface coating operations. Miscellaneous metal parts surface coating operations are not subject to NSPS regulation and the lifts are not considered automobiles or light-duty trucks which would be subject to the regulation.

Prevention of Significant Deterioration (PSD)

Sources subject to PSD regulations are new “major stationary sources” and “major modifications” to existing major stationary sources located in areas designated as attainment or unclassifiable for the National Ambient Air Quality Standards (NAAQS). The JLG Jefferson City facility is not a major source under the PSD program because the facility’s potential to emit does not exceed 250 tpy for any criteria pollutant. The potential VOC emissions associated with the surface coating operations are less than 250 tpy and significantly less for each criteria pollutant. Consequently, PSD is not applicable to this project.

National Emission Standards for Hazardous Air Pollutants (NESHAP)

NESHAP standards promulgated prior to the 1990 Clean Air Act Amendments (CAAA) are found in 40 CFR Part 61 and apply to seven specific compounds emitted from specific sources. Pursuant to the CAAA of 1990, NESHAP specific to processes identified that emit an additional 189 hazardous air pollutants (HAPs) are promulgated in 40 CFR Part 63. The JLG Jefferson City facility is a minor, or “area”, source of HAP emissions and facility-wide HAP emissions will be limited to 10/25 tpy for any single/combination of HAPs. Consequently, none of the major source NESHAP requirements are applicable to the facility. Area source NESHAP standards are addressed below.

The Metal Fabrication and Finishing NESHAP (40 CFR 63 Subpart XXXXXX) does not apply to the Jefferson City facility because it is not “primarily engaged” in any of the nine (9) source categories regulated by this regulation. Specifically, the Jefferson City facility’s primary operations are described by the SIC Code 3531 (Manufacturing – Construction Machinery) and the NAICS code 333923. EPA guidance titled “Nine Metal Fabrication and Finishing Area Source Categories, 40 CFR Part 63 Subpart XXXXXX (6X) NESHAP Questions & Answers November 2011” lists the SIC/NAICS code combinations subject to the regulation and states that “If the SIC/NAICS code combination used to describe the facility’s primary activities is not one of those specifically listed..., the facility is not subject to the rule.” The Jefferson City facility’s combination of SIC/NAICS codes are not listed in the guidance document.

The Jefferson City facility does not engage in Electroplating, Electroless or non-electrolytic plating, or other non-electrolytic metal coating processes. Therefore, the facility is not subject to the Area Source Standards for Plating and Polishing Operations NESHAP (40 CFR 63 Subpart WWWWWW).

The Paint Stripping and Miscellaneous Surface Coating Operations NESHAP (40 CFR 63 Subpart HHHHHH) does not apply to this facility because JLG does not use paint strippers that contain methylene chloride, does not coat assembled motor vehicles or mobile equipment and does not coat metal and/or plastic parts with coatings that contain the target HAPs. The definition of motor vehicle and mobile equipment surface coating “...does not include the surface coating of motor vehicle or mobile equipment parts or subassemblies at a vehicle assembly plant or parts manufacturing plant.”

The Area Source Boiler NESHAP (40 CFR 63 Subpart JJJJJJ) is not applicable to the Jefferson City facility because the hot water heaters are either electrically heated or fired by natural gas.

JLG also operates one (1) natural gas-fired emergency generator. Due to the date of manufacture (07/2002), The generator is subject to the Reciprocating Internal Combustion Engine (RICE) regulations found at 40 CFR 63, subpart ZZZZ and is categorized as an existing source due to construction commencing prior to June 12, 2006 (engine manufactured 07/2002). The engine is equipped with non-resettable hour meters and engine operating hours and maintenance procedures are recorded. Potential emissions are provided in Attachment D of the attached report.

Tennessee Surface Coating Rules

Tennessee has rules specific to the coating of miscellaneous metal parts (Chapter 1200-03-18-.20). JLG intends to use coatings that comply with the VOC content requirements of this regulation because the potential VOC emissions from surface coating are >100 tpy and the facility is located in Jefferson County. The rules specific to the coating of plastic parts (1200-03-18-.44) and motor vehicle/mobile equipment refinishing (1200-03-18-.45) are not applicable because the facility is not located in Davidson, Rutherford, Sumner, Williamson or Wilson counties. SDS for typical coatings are included in Attachment E of this application.

If you have any questions or require any additional information regarding the permit application, please do not hesitate to contact me at 717-485-6423, or our environmental consultant, Michael Zeiders, of Liberty Environmental, Inc., at 610-375-9301.

Sincerely,



Jason M. Sharpe
Principal Environmental Engineer
JLG Industries, Inc.

**APPLICATION FOR A CONSTRUCTION PERMIT FOR SURFACE
COATING OPERATIONS**

ATTACHMENT A
APPLICATION FORMS



TITLE V PERMIT APPLICATION INDEX OF AIR POLLUTION PERMIT APPLICATION FORMS

Section 1: Identification and Diagrams		
This application contains the following forms:	APC Form 1, Facility Identification	1
	APC Form 2, Operations and Flow Diagrams	1

Section 2: Emission Source Description Forms		
		Total number of this form
This application contains the following forms (one form for each incinerator, printing operation, fuel burning installation, etc.):	APC Form 3, Stack Identification	1
	APC Form 4, Fuel Burning Non-Process Equipment	1
	APC Form 5, Stationary Gas Turbines or Internal Combustion Engines	1
	APC Form 6, Storage Tanks	
	APC Form 7, Incinerators	
	APC Form 8, Printing Operations	
	APC Form 9, Painting and Coating Operations	1
	APC Form 10, Miscellaneous Processes	1
	APC Form 33, Stage I and Stage II Vapor Recovery Equipment	
	APC Form 34, Open Burning	

Section 3: Air Pollution Control System Forms		
		Total number of this form
This application contains the following forms (one form for each control system in use at the facility):	APC Form 11, Control Equipment - Miscellaneous	1
	APC Form 13, Adsorbers	
	APC Form 14, Catalytic or Thermal Oxidation Equipment	
	APC Form 15, Cyclones/Settling Chambers	
	APC Form 17, Wet Collection Systems	
	APC Form 18, Baghouse/Fabric Filters	1

(OVER)

Section 4: Compliance Demonstration Forms

		Total number of this form
This application contains the following forms (one form for each incinerator, printing operation, fuel burning installation, etc.):	APC Form 19, Compliance Certification - Monitoring and Reporting - Description of Methods for Determining Compliance	2
	APC Form 20, Continuous Emissions Monitoring	
	APC Form 21, Portable Monitors	
	APC Form 22, Control System Parameters or Operating Parameters of a Process	
	APC Form 23, Monitoring Maintenance Procedures	1
	APC Form 24, Stack Testing	
	APC Form 25, Fuel Sampling and Analysis	
	APC Form 26, Record Keeping	1
	APC Form 27, Other Methods	
	APC Form 28, Emissions from Process Emissions Sources / Fuel Burning Installations / Incinerators	1
	APC Form 29, Emissions Summary for the Facility or for the Source Contained in This Application	1
	APC Form 30, Current Emissions Requirements and Status	2
	APC Form 31, Compliance Plan and Compliance Certification	1
	APC Form 32, Air Monitoring Network	

Section 5: Statement of Completeness and Certification of Compliance

I have reviewed this application in its entirety and to the best of my knowledge, and based on information and belief formed after reasonable inquiry, the statements and information contained in this application are true, accurate, and complete. I have provided all the information that is necessary for compliance purposes and this application consists of 1 _____ pages and they are numbered from page 1 _____ to 139 _____. The status of this facility's compliance with all applicable air pollution control requirements, including the enhanced monitoring and compliance certification requirements of the Federal Clean Air Act, is reported in this application along with the methods to be used for compliance demonstration.

Name and Title of Responsible Official

Telephone Number with Area Code

Shawn D. Knox, Vice President

301-745-3921

Signature of Responsible Official

Date of Application



08/29/2023

(For definition of responsible official, see instructions for APC Form 1)



TITLE V PERMIT APPLICATION FACILITY IDENTIFICATION

SITE INFORMATION				
1. Organization's legal name JLG Industries, Inc.			For APC Use Only	APC company point no.
2. Site name (if different from legal name) JLG Industries, Inc. - Jefferson City, TN				APC Log/Permit no.
3. Site address (St./Rd./Hwy.) 1400 Flat Gap Road			NAICS or SIC Code 333923	
City or distance to nearest town Jefferson City		Zip code 37760	County name Jefferson	
4. Site location (in Lat./Long)	Latitude 36.106348 N		Longitude 83.4928388 W	
CONTACT INFORMATION (RESPONSIBLE OFFICIAL)				
5. Responsible official contact Shawn D. Knox			Phone number with area code 301-745-3921	
6. Mailing address (St./Rd./Hwy.) 13712 Crayton Blvd			Fax number with area code N/A	
City Hagerstown	State MD	Zip code 21742	Email address sknox@jlg.com	
CONTACT INFORMATION (TECHNICAL)				
7. Principal technical contact Jason M. Sharpe			Phone number with area code 717-485-6423	
8. Mailing address (St./Rd./Hwy.) 1 JLG Drive			Fax number with area code N/A	
City McConnellsburg	State PA	Zip code 17233	Email address jmsharpe@jlg.com	
CONTACT INFORMATION (BILLING)				
11. Billing contact Jason M. Sharpe			Phone number with area code 717-485-6423	
12. Mailing address (St./Rd./Hwy.) 1 JLG Drive			Fax number with area code N/A	
City McConnellsburg	State PA	Zip code 17233	Email address jmsharpe@jlg.com	
TYPE OF PERMIT REQUESTED				
13. Permit requested for: Initial application to operate : ☒ Permit renewal to operate : ☐ Administrative permit amendment : ☐ Minor permit modification : ☐ Significant modification : ☐ Construction permit : ☒				

(OVER)

HAZARDOUS AIR POLLUTANTS, DESIGNATIONS, AND OTHER PERMITS ASSOCIATED WITH FACILITY

14. Is this facility subject to the provisions governing prevention of accidental releases of hazardous air contaminants contained in Chapter 1200-03-32 of the Tennessee Air Pollution Control regulations?

☐

Yes

☒

No

If the answer is Yes, are you in compliance with the provisions of Chapter 1200-03-32 of the Tennessee Air Pollution Control regulations?

☐

Yes

☐

No

15. If facility is located in an area designated as "Non-Attainment" or "Additional Control", indicate the pollutant(s) for the designation.

N/A - In attainment

16. List all valid Air Pollution permits issued to the sources contained in this application [identify all permits with most recent permit numbers and emission source reference numbers listed on the permit(s)].

None.

17. Page number :

Revision number:

Date of revision:



TITLE V PERMIT APPLICATION OPERATIONS AND FLOW DIAGRAMS

1. Please list, identify, and describe briefly process emission sources, fuel burning installations, and incinerators that are contained in this application. Please attach a flow diagram for this application.

See Att. B and C

2. List all insignificant activities which are exempted because of size or production rate and cite the applicable regulations.

See Att. B and C.

3. Are there any storage piles?

YES _____ NO ☒

4. List the states that are within 50 miles of your facility.

Kentucky, Virginia, North Carolina

5. Page number:

Revision Number:

Date of Revision:



TITLE V PERMIT APPLICATION STACK IDENTIFICATION

GENERAL IDENTIFICATION AND DESCRIPTION	
1. Facility name: JLG Industries, Inc. - Jefferson City, TN	
2. Emission source (identify): See Att. B - Sources 01 through 06: Shot Blast Booth, Primer & Topcoat Booths, Cure Oven Em. Gener	
STACK DESCRIPTION	
3. Stack ID (or flow diagram point identification): See Att. B & PFD in Att. C.	
4. Stack height above grade in feet: See Att. B	
5. Velocity (data at exit conditions): See Att. B (Actual feet per second)	6. Inside dimensions at outlet in feet: See Att. B
7. Exhaust flowrate at exit conditions (ACFM): See Att. B	8. Flow rate at standard conditions (DSCFM): See Att. B
9. Exhaust temperature: See Att. B Degrees Fahrenheit (°F) See Att	10. Moisture content (data at exit conditions): Att. B Percent Grains per dry standard cubic foot (gr./dscf.)
11. Exhaust temperature that is equaled or exceeded during ninety (90) percent or more of the operating time (for stacks subject to diffusion equation only): N/A	
12. If this stack is equipped with continuous pollutant monitoring equipment required for compliance, what pollutant(s) does this equipment monitor (e.g., Opacity, SO₂, NO_x, etc.)? N/A	
Complete the appropriate APC form(s) 4, 5, 7, 8, 9, or 10 for each source exhausting through this stack.	
BYPASS STACK DESCRIPTION	
13. Do you have a bypass stack? Yes ☐ No ☒ If yes, describe the conditions which require its use & complete APC form 4 for the bypass stack. Please identify the stack number(s) of flow diagram point number(s) exhausting through this bypass stack.	
14. Page number: Revision Number: Date of Revision:	



TITLE V PERMIT APPLICATION FUEL BURNING NON-PROCESS EQUIPMENT

GENERAL IDENTIFICATION AND DESCRIPTION				
1. Facility name: JLG Industries, Inc. - Jefferson City, TN				
2. Stack ID or flow diagram point identification (s): See Att. B - Source 02 (Primer Booth), 03 (Topcoat Booth), 04 (Cure oven) 05 (Touch-up Booth)				
FUEL BURNING EQUIPMENT DESCRIPTION				
3. List all fuel burning equipment that is at this fuel burning installation (please complete an APC 4 form for each piece of fuel burning equipment). See Att. B - Natural gas fired burners in drying oven, curing oven, paint booths (AMUs), cure oven				
4. Fuel burning equipment identification number: See Att. B				
5. Fuel burning equipment description: See Att B				
6. Year of installation or last modification of fuel burning equipment. See Att B.				
7. Furnace type: See Att. B		8. Manufacturer model number (if available): See Att. B		
9. Location of this fuel burning installation in UTM coordinates: UTM Vertical: <u>N/D</u> UTM Horizontal: <u>N/D</u>				
10. Normal operating schedule: <u>24</u> Hrs./Day <u>7</u> Days/Wk. <u>365</u> Days/Yr.				
FUELS, CONTROLS, AND MONITORING DESCRIPTION				
11. Maximum rated heat input capacity (in million BTU/Hour) See Att. B - 2.5-5.0 MMBtu/burner		12. If wood is used as a fuel, specify the amount of wood used as a fraction of total heat input. N/A		
13. Fuels:	Primary fuel	Backup fuel #1	Backup fuel #2	Backup fuel #3
Fuel name	Natural Gas			
Actual yearly consumption				
14. If emissions from this fuel burning equipment are controlled for compliance, please specify the type of control: N/A				
15. If emissions from this fuel burning equipment are monitored for compliance, please specify the type of monitoring: N/A				
16. Describe any fugitive emissions associated with this process, such as outdoor storage piles, open conveyors, material handling operations, etc. (please attach a separate sheet if necessary). N/A				
17. Page number:		Revision Number:		Date of Revision:



TITLE V PERMIT APPLICATION STATIONARY GAS TURBINE OR INTERNAL COMBUSTION ENGINE

GENERAL IDENTIFICATION AND DESCRIPTION				
1. Facility name: JLG Industries, Inc. - Jefferson City, TN				
2. Stack ID or flow diagram point identification (s): S-06-01				
GAS TURBINE OR INTERNAL COMBUSTION ENGINE DESCRIPTION				
3. List all gas turbines and internal combustion engines at this facility on a separate sheet, and please complete an APC 5 form for each piece of equipment. Emergency Generator				
4. Manufacturer and model number: Cummins, GGKD-5564831				
5. Equipment description: 150 kW natural gas-fired emergency generator. Max 500 hours/yr.				
6. Date of installation or last modification of equipment: Mfg. 2002				
7. Rated heat input capacity (in million BTU/Hour) and rated horsepower: 240 hp (1.952 MMBtu/hr) State which heating value was utilized: ☒ Higher heating value ☐ Lower heating value		8. If equipment is a gas turbine, list type: ☐ Simple cycle ☐ Regenerative cycle ☐ Combined cycle		
9. Location of this fuel burning installation in UTM coordinates: UTM Vertical: <u>N/D</u> UTM Horizontal: <u>N/D</u>				
10. Normal operating schedule: <u>N/A</u> Hrs./Day <u> </u> Days/Wk <u> </u> Days/Yr.				
FUEL DESCRIPTION				
11. Fuels:	Primary fuel	Backup fuel #1	Backup fuel #2	Backup fuel #3
Fuel name	Natural gas			
Actual yearly consumption	See Att. D			
12. (For NSPS turbines only) Manufacturer's rated heat rate at manufacturer's rated peak load (kilojoules per watt hour), or actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the unit: N/A				
13. Page number:		Revision Number:		Date of Revision:



TITLE V PERMIT APPLICATION PAINTING AND COATING OPERATIONS

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name: JLG Industries, Inc. - Jefferson City, TN	
2. Process description: Frame/Boom Coating Line/Touch-Up Booth - Source 02, 03, 05	
3. Year of construction or last modification: 2023	4. Stack ID or flow diagram point identification(s): See Att. B
If the emissions are controlled for compliance, attach an appropriate Air Pollution Control system form. If this printing operation is monitored for compliance, please attach the appropriate compliance demonstration form.	
5. Normal operating schedule 24 Hrs./Day 7 Days/Wk. 365 Days/Yr.	
6. Location of this operation in UTM coordinates: UTM Vertical: 36.106348 UTM Horizontal: 83.4928389	
7. Oven curing (complete if applicable): Number of ovens: 1 Temperature of air contacting coated material as it leaves the oven (°F): 250 Specify oven fuels: Natural Gas Total maximum heat input to each oven: 2 Burners @ 2.5 MMBtu, each	
8. Application technique and transfer efficiency (%): Approx 65% (HVLV)	

COATINGS AND SOLVENTS

9. Complete the following table – Attach additional tables as needed – Fill in only the items necessary for determination of compliance with emission standard(s).												
Identify coatings	Maximum Usage		Normal Usage Gal./Mo.	Coating Composition: Volume and weight percent as applied						Density of Solvent Fraction Lbs./Gal.	Coating Density Lbs./Gal.	
	Gal./Hr.	Gal./Mo.		Solids		Solvents (VOCs) Wt. %	Water		Exempt Solvent			
				Vol. %	Wt. %		Vol.	Wt.	Vol.			Wt.
Primer (SPU71866E typical)	See Att. D	See Att. D	See Att. D	49.9	71.3	18.9	0.1	0.1	17.7	9.7	7.03	12.24
Topcoat (SPU71766A typical)	See Att. D	See Att. D	See Att. D	46.15	56.85	24.7	0.17	0.16	23.36	18.28	7.04	8.76
(as applied)												
See Att. E for EDS												
Total coatings	See Att. D	See Att. D	See Att. D									
List the Thinning Solvents used with the coatings identified above:												
(1):												
(2):												
Clean-up solvents:	JLG Blend	See Att D	See Att. D	0	0	27	0	0	N/D	73	N/D	6.456
Other (specify):												
10. Page number: Revision Number: Date of Revision:												

GENERAL IDENTIFICATION AND DESCRIPTION			
1. Facility name: JLG Industries, Inc. Jefferson City, TN			
2. Process emission source (identify): Shot Blast Booth - Blast Cleaning Technologies M12-108x90 Pass-Through Blast System (Source 01)			
3. Stack ID or flow diagram point identification (s): See Att. B		4. Year of construction or last modification: 2023	
If the emissions are controlled for compliance, attach an appropriate Air Pollution Control system form.			
5. Normal operating schedule: 24 Hrs./Day 7 Days/Wk. 365 Days/Yr.			
6. Location of this process emission source in UTM coordinates: UTM Vertical : 36.106348 UTMHorizontal: 83.4928388			
7. Describe this process (Please attach a flow diagram of this process) and check one of the following: ☐ Batch ☒ Continuous			
PROCESS MATERIAL INPUT AND OUTPUT			
8. List the types and amounts of raw materials input to this process:			
Material	Storage/Material handling process	Average usage (units)	Maximum usage (units)
Steel frames		300/week	375/week
Steel booms		1050/week	1313/week
Shot		Recirculated	Recirculated
9. List the types and amounts of primary products produced by this process:			
Material	Storage/Material handling process	Average usage (units)	Maximum usage (units)
Steel frames		300/week	375/week
Stell booms		1050/week	1313/week
10. Process fuel usage:			
Type of fuel	Max heat input (10 ⁶ BTU/Hr.)	Average usage (units)	Maximum usage (units)
None			
11. List any solvents, cleaners, etc., associated with this process: None			
If the emissions and/or operations of this process are monitored for compliance, please attach the appropriate Compliance Demonstration form.			
12. Describe any fugitive emissions associated with this process, such as outdoor storage piles, open conveyors, open air sand blasting, material handling operations, etc. (please attach a separate sheet if necessary). None			
13. Page number:		Revision Number:	Date of Revision:



TITLE V PERMIT APPLICATION CONTROL EQUIPMENT - MISCELLANEOUS

GENERAL IDENTIFICATION AND DESCRIPTION		
1. Facility name: JLG Industries, Inc.- Jefferson City, TN	2. Emission source (identify): Primer and Topcoat Booths, Touch-up Booth (Sources 02, 03, 05)	
3. Stack ID or flow diagram point identification (s): See Att. B		
CONTROL EQUIPMENT DESCRIPTION		
4. Describe the device in use. List the key operating parameters of this device and their normal operating range (e.g., pressure drop, gas flow rate, temperature): Paint arrestor dry filters. 27,000 cfm - Primer and Topcoat Booth, each. 56,000 cfm Touch-up Booth. Temperature - 70F. Pressure drop 0 - 0.5" H2O.		
5. Manufacturer and model number (if available): See Att. B		
6. Year of installation: 2023		
7. List of pollutant (s) to be controlled by this equipment and the expected control efficiency for each pollutant.		
Pollutant	Efficiency (%)	Source of data
PM/PM10/PM2.5	See Att. B	See Att. B
8. Discuss how collected material is handled for reuse or disposal. The filters and the collected overspray will be disposed of in accordance with Federal and State law.		
9. If this control equipment is in series with some other control equipment, state and specify the overall efficiency. N/A		
10. Page number:	Revision Number:	Date of Revision:

CN- 1413 Initial Application 08/31/2023 18 RDA 1298



TITLE V PERMIT APPLICATION
COMPLIANCE CERTIFICATION - MONITORING AND REPORTING
DESCRIPTION OF METHODS USED FOR DETERMINING COMPLIANCE

All sources that are subject to 1200-03-09-.02(11) of the Tennessee Air Pollution Control Regulations are required to certify compliance with all applicable requirements by including a statement within the permit application of the methods used for determining compliance. This statement must include a description of the monitoring, recordkeeping, and reporting requirements and test methods. In addition, the application must include a schedule for compliance certification submittals during the permit term. These submittals must be no less frequent than annually and may need to be more frequent if specified by the underlying applicable requirement or the Technical Secretary.

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name: **JLG Industries, Inc. - Jefferson City, TN**
2. Process emission source, fuel burning installation, or incinerator (identify): **06 - Emergency Generator**
3. Stack ID or flow diagram point identification(s): **S-06-01**

METHODS OF DETERMINING COMPLIANCE

4. This source as described under Item #2 of this application will use the following method(s) for determining compliance with applicable requirements (and special operating conditions from an existing permit). Check all that apply and attach the appropriate form(s)

☐ Continuous Emission Monitoring (CEM) - APC 20
 Pollutant(s): _____

☐ Emission Monitoring Using Portable Monitors - APC 21
 Pollutant(s): _____

☐ Monitoring Control System Parameters or Operating Parameters of a Process - APC 22
 Pollutant(s): _____

☒ Monitoring Maintenance Procedures - APC 23
 Pollutant(s): **HAPs**

☐ Stack Testing - APC 24
 Pollutant(s): _____

☐ Fuel Sampling & Analysis (FSA) - APC 25
 Pollutant(s): _____

☐ Recordkeeping - APC 26
 Pollutant(s): _____

☐ Other (please describe) - APC 27
 Pollutant(s): _____

5. Compliance certification reports will be submitted to the Division according to the following schedule:

Start date: **03/01/2024**

And every **365** days thereafter.

6. Compliance monitoring reports will be submitted to the Division according to the following schedule:

Start date: **N/A**

And every _____ days thereafter.

7. Page number: _____ Revision number: _____ Date of revision: _____



TITLE V PERMIT APPLICATION

COMPLIANCE CERTIFICATION - MONITORING AND REPORTING

DESCRIPTION OF METHODS USED FOR DETERMINING COMPLIANCE

All sources that are subject to 1200-03-09-.02(11) of the Tennessee Air Pollution Control Regulations are required to certify compliance with all applicable requirements by including a statement within the permit application of the methods used for determining compliance. This statement must include a description of the monitoring, recordkeeping, and reporting requirements and test methods. In addition, the application must include a schedule for compliance certification submittals during the permit term. These submittals must be no less frequent than annually and may need to be more frequent if specified by the underlying applicable requirement or the Technical Secretary.

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name: JLG Industries, Inc. - Jefferson City, TN
2. Process emission source, fuel burning installation, or incinerator (identify): 02/03/05 - Surface Coating Operations
3. Stack ID or flow diagram point identification(s): S-02-01, S-02-02, S-03-01, S-03-02, S-05-01, SA-05-02, S-05-03, S-05-04

METHODS OF DETERMINING COMPLIANCE

4. This source as described under Item #2 of this application will use the following method(s) for determining compliance with applicable requirements (and special operating conditions from an existing permit). Check all that apply and attach the appropriate form(s)

☐ Continuous Emission Monitoring (CEM) - APC 20
 Pollutant(s): _____

☐ Emission Monitoring Using Portable Monitors - APC 21
 Pollutant(s): _____

☐ Monitoring Control System Parameters or Operating Parameters of a Process - APC 22
 Pollutant(s): _____

☐ Monitoring Maintenance Procedures - APC 23
 Pollutant(s): _____

☐ Stack Testing - APC 24
 Pollutant(s): _____

☐ Fuel Sampling & Analysis (FSA) - APC 25
 Pollutant(s): _____

☒ Recordkeeping - APC 26
 Pollutant(s): VOC (Compliant coatings)

☐ Other (please describe) - APC 27
 Pollutant(s): _____
5. Compliance certification reports will be submitted to the Division according to the following schedule:

Start date: 03/01/2024

And every 365 days thereafter.
6. Compliance monitoring reports will be submitted to the Division according to the following schedule:

Start date: N/A

And every _____ days thereafter.
7. Page number: _____ Revision number: _____ Date of revision: _____



TITLE V PERMIT APPLICATION

COMPLIANCE DEMONSTRATION BY MONITORING MAINTENANCE PROCEDURES

The monitoring of a maintenance procedure shall be acceptable as a compliance demonstration method provided that a correlation between the procedure and the emission rate of a particular pollutant is established.

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:
 JLG Industries, Inc. - Jefferson City, TN

2. Stack ID or flow diagram point identification(s):
 S-06-01

3. Emission source (identify):
 Emergency Generator

MONITORING DESCRIPTION

4. Pollutant(s) being monitored:
 HAPs

5. Procedure being monitored:
 JLG will monitor and record the generator's hours of operation, reason for operation, and maintenance schedule as required by 40 CFR 63 Subpart ZZZZ.

6. Description of the method of monitoring and establishment of correlation between the procedure and the emission rate of a particular pollutant:
 N/A

7. Compliance demonstration frequency (specify the frequency with which compliance will be demonstrated):
 Operating schedule records will be kept monthly. Maintenance records will be kept annually.

8. Page number: Revision number: Date of revision:



TITLE V PERMIT APPLICATION COMPLIANCE DEMONSTRATION BY RECORDKEEPING

Recordkeeping shall be acceptable as a compliance demonstration method provided that a correlation between the parameter value recorded and the applicable requirement is established.

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name: JLG Industries, Inc. - Jefferson City, TN	2. Stack ID or flow diagram point identification(s): S-02-01, S-02-02, S-03-01, S-03-02, S-05-01, S-05-02, S-05-03, S-05-04 (Surface Coating)
3. Emission source (identify): Primer Booth, Topcoat Booth, Stand Alone Touch-Up Booth (02, 03, 05)	

MONITORING AND RECORDKEEPING DESCRIPTION

4. Pollutant(s) or parameter being monitored: Coating VOC content	
5. Material or parameter being monitored and recorded: Coating VOC content to comply with the requirements of 1200-03-18-.20 Coating of Miscellaneous Metal Parts.	
6. Method of monitoring and recording: JLG will retain records of the VOC content of each coating (as applied) using SDS and or EDS information.	
7. Compliance demonstration frequency (specify the frequency with which compliance will be demonstrated): Annual emission report.	

8. Page number:	Revision number:	Date of revision:
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TITLE V PERMIT APPLICATION

EMISSIONS FROM PROCESS EMISSION SOURCE / FUEL BURNING INSTALLATION / INCINERATOR

GENERAL IDENTIFICATION AND DESCRIPTION				
1. Facility name: JLG Industries, Inc. - Jefferson City, TN	2. Stack ID or flow diagram point identification(s): See Att. B and C			
3. Process emission source / Fuel burning installation / Incinerator (identify): See Att. D				
EMISSIONS SUMMARY TABLE – CRITERIA AND FUGITIVE EMISSIONS				
4. Complete the following <u>emissions summary for regulated air pollutants</u> . Fugitive emissions shall be included. Attach calculations and emission factor references.				
Air Pollutant	Maximum Allowable Emissions		Actual Emissions	
	Tons per Year	Reserved for State use (Pounds per Hour - Item 7, APC 30)	Tons per Year	Reserved for State use (Pounds per Hour - Item 8, APC 30)
	See Att. D.			
Particulate Matter (TSP)				
(Fugitive Emissions)				
Sulfur Dioxide				
(Fugitive Emissions)				
Volatile Organic Compounds				
(Fugitive Emissions)				
Carbon Monoxide				
(Fugitive Emissions)				
Lead				
(Fugitive Emissions)				
Nitrogen Oxides				
(Fugitive Emissions)				
Total Reduced Sulfur				
(Fugitive Emissions)				
Mercury				
(Fugitive Emissions)				
(Continued on next page)				

(Continued from last page)

AIR POLLUTANT	Maximum Allowable Emissions		Actual Emissions	
	Tons per Year	Reserved for State use (Pounds per Hour - Item 7, APC 30)	Tons per Year	Reserved for State use (Pounds per Hour - Item 8, APC 30)
Asbestos				
(Fugitive Emissions)				
Beryllium				
(Fugitive Emissions)				
Vinyl Chloride				
(Fugitive Emissions)				
Fluorides				
(Fugitive Emissions)				
Gaseous Fluorides				
(Fugitive Emissions)				
Greenhouse Gases in CO ₂ Equivalents				

EMISSIONS SUMMARY TABLE – FUGITIVE HAZARDOUS AIR POLLUTANTS

5. Complete the following emissions summary for regulated air pollutants that are hazardous air pollutant(s). Fugitive emissions shall be included. Attach calculations and emission factor references.

Air Pollutant & CAS	Maximum Allowable Emissions		Actual Emissions	
	Tons per Year	Reserved for State use (Pounds per Hour - Item 7, APC 30)	Tons per Year	Reserved for State use (Pounds per Hour - Item 8, APC 30)
See Att. D				

6. Page number: Revision number: Date of revision



TITLE V PERMIT APPLICATION EMISSION SUMMARY FOR THE FACILITY OR FOR THE SOURCES CONTAINED IN THIS APPLICATION

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name: JLG Industries, Inc. Jefferson City, TN

EMISSIONS SUMMARY TABLE – CRITERIA AND SELECTED POLLUTANTS

2. Complete the following emissions summary for regulated air pollutants at this facility or for the sources contained in this application.

Air Pollutant	Summary of Maximum Allowable Emissions		Summary of Actual Emissions	
	Tons per Year	Reserved for State use (Pounds per Hour- Item 4, APC 28)	Tons per Year	Reserved for State use (Pounds per Hour- Item 4, APC 28)
	See Att. D			
Particulate Matter (TSP)				
Sulfur Dioxide				
Volatile Organic Compounds				
Carbon Monoxide				
Lead				
Nitrogen Oxides				
Total Reduced Sulfur				
Mercury				
Asbestos				
Beryllium				
Vinyl Chlorides				
Fluorides				
Gaseous Fluorides				
Greenhouse Gases in CO ₂ Equivalents				

(Continued on next page)

3. Complete the following emissions summary for regulated air pollutants that are hazardous air pollutant(s) at this facility or for the sources contained in this application.

4. Page number: Revision number: Date of revision:



**TITLE V PERMIT APPLICATION
 CURRENT EMISSIONS REQUIREMENTS AND STATUS**

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name: JLG Industries, Inc. - Jefferson City, TN	2. Emission source number 06
3. Describe the process emission source / fuel burning installation / incinerator. Emergency Generator	

EMISSIONS AND REQUIREMENTS

4. Identify if only a part of the source is subject to this requirement	5. Pollutant	6. Applicable requirement(s): TN Air Pollution Control Regulations, 40 CFR, permit restrictions, air quality based standards	7. Limitation	8. Maximum actual emissions	9. Compliance status (In/Out)
	HAPs	40 CFR 63 Subpart ZZZZ	Operating/Maint.	See Att D	In

10. Other applicable requirements (new requirements that apply to this source during the term of this permit)

11. Page number:	Revision number:	Date of revision:
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State of Tennessee
 Department of Environment and Conservation
 Division of Air Pollution Control
 William R. Snodgrass Tennessee Tower
 312 Rosa L. Parks Avenue, 15th Floor
 Nashville, TN 37243
 Telephone: (615) 532-0554



APC 30

TITLE V PERMIT APPLICATION CURRENT EMISSIONS REQUIREMENTS AND STATUS

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name: JLG Industries, Inc. Jefferson City, TN	2. Emission source number 02, 03, 05
3. Describe the process emission source / fuel burning installation / incinerator. Primer, Topcoat and Touch-Up Paint Booths	

EMISSIONS AND REQUIREMENTS

4. Identify if only a part of the source is subject to this requirement	5. Pollutant	6. Applicable requirement(s): TN Air Pollution Control Regulations, 40 CFR, permit restrictions, air quality based standards	7. Limitation	8. Maximum actual emissions	9. Compliance status (In/Out)
	VOC	1200-03-18-.20 Coating of	Compliant	See Att. D	In

10. Other applicable requirements (new requirements that apply to this source during the term of this permit)

11. Page number:	Revision number:	Date of revision:
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TITLE V PERMIT APPLICATION COMPLIANCE PLAN AND COMPLIANCE CERTIFICATION

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:

JLG Industries, Inc. - Jefferson City, TN

2. List all the process emission source(s) or fuel burning installation(s) or incinerator(s) that are part of this application.

See Att. B

COMPLIANCE PLAN AND CERTIFICATION

3. Indicate that source(s) which are contained in this application are presently in compliance with all applicable requirements, by checking the following:

☒

A. Attached is a statement of identification of the source(s) currently in compliance. We will continue to operate and maintain the source(s) to assure compliance with all the applicable requirements for the duration of the permit.

☒

B. APC 30 form(s) includes new requirements that apply or will apply to the source(s) during the term of the permit. We will meet such requirements on a timely basis.

4. Indicate that there are source(s) that are contained in this application which are not presently in full compliance, by checking both of the following:

_____ A. Attached is a statement of identification of the source(s) not in compliance, non-complying requirement(s), brief description of the problem, and the proposed solution.

_____ B. We will achieve compliance according to the following schedule:

Action

Deadline

N/A

Progress reports will be submitted:

Start date: **N/A** and every 180 days thereafter until compliance is achieved.

5. State the compliance status with any applicable compliance assurance monitoring and compliance certification requirements that have been promulgated under section 114(a)(3) of the Clean Air Act as of the date of submittal of this APC 31.

N/A

6. Page number:

Revision number:

Date of revision:

ATTACHMENT B
SOURCE INFORMATION

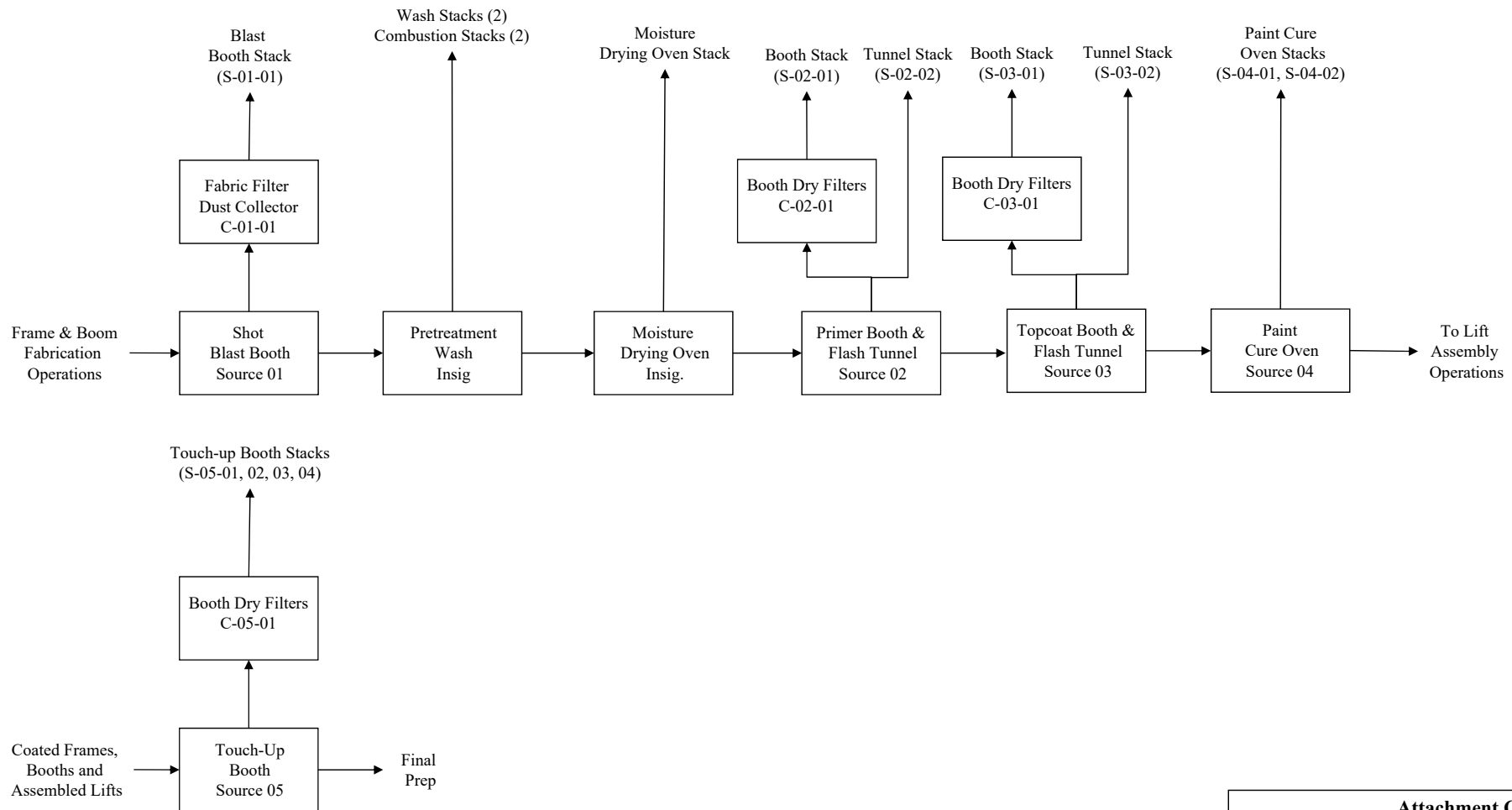
TABLE B-1
SOURCE LIST - SUMMARY 08-31-2023
JLG INDUSTRIES, INC. - JEFFERSON CITY, TN

Source ID	Source Description	Manufacturer	Model Number	# Burners	MMBtu Each	Fuel	Control Device ID	Control Device	Manufacturer	Model Number	Pollutant Controlled	Efficiency	Data source	Stack #	Fan HP	ACFM	DSCFM	Temp	Moisture %	Height	Diameter
New Operations																					
01	Shot Blast Booth #1	Blast Cleaning Technologies	M12-108x90	N/A	N/A	N/A	C-01-01	Fabric Filter	CMAXX	CM306	PM/PM10/PM2.5	95.0%	Proposal (MERV 15 Filters)	S-01-01	100	30,000	N/D	70	Ambient	TBD	TBD
Insig.	Pretreatment Wash #1	Belco Industries Incorporated	Custom				N/A	N/A	N/A	N/A	N/A	N/A	N/A		10	16,290	N/D	70	Saturated	50	36
							N/A	N/A	N/A	N/A	N/A	N/A	N/A		10	16,290	N/D	70	Saturated	50	36
	Stage 1 Burner			1	5.00	Natural Gas	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/D	N/D	250	Saturated	50	26
	Stage 4 Burner			1	2.50	Natural Gas	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/D	N/D	250	Saturated	50	16
	Moisture Drying Oven #1	Belco Industries Incorporated	Custom	1	3.50	Natural Gas	N/A	N/A	N/A	N/A	N/A	N/A	N/A		3	5,700	N/D	250	Saturated	50	42
02	Primer Booth #1	Belco Industries Incorporated	#DTPDF5036	AMU	2.50	Natural Gas	C-02-01	Polyester dry filters	TBD	TBD	PM/PM10/PM2.5	99.0%	Engineering judgement	S-02-01	10	27,000	N/D	70	Ambient	46	42
	Primer Flash Tunnel #1	Belco Industries Incorporated					N/A	N/A	N/A	N/A	N/A	N/A	N/A	S-02-02	20	30,800	N/D	70	Ambient	50	32
03	Topcoat Booth #1	Belco Industries Incorporated	#DTPDF5036	AMU	2.50	Natural Gas	C-03-01	Polyester dry filters	TBD	TBD	PM/PM10/PM2.5	99.0%	Engineering judgement	S-03-01	10	27,000	N/D	70	Ambient	46	42
	Topcoat Flash Tunnel #1	Belco Industries Incorporated					N/A	N/A	N/A	N/A	N/A	N/A	N/A	S-03-02	20	30,800	N/D	70	Ambient	50	32
04	Paint Cure Oven #1	Belco Industries Incorporated	33.6' L x 22.6'H x 72'L	1	2.50	Natural Gas	N/A	N/A	N/A	N/A	N/A	N/A	N/A	S-04-01	3	6,750	N/D	250	Ambient	50	28
				1	2.50	Natural Gas	N/A	N/A	N/A	N/A	N/A	N/A	N/A	S-04-02	3	6,750	N/D	250	Ambient	50	28
05	Touch Up Booth #1	GFS	16' W x 14' H x 70' L	2	3.00	Natural Gas	C-05-01	Dry Filters	GFS Wave	20"x20"x2"	PM/PM10/PM2.5	99.94%	Mfg.	S-05-01	3	14,000	N/D	160	Ambient	46	36
							C-05-01	Dry Filters	GFS Wave	20"x20"x2"	PM/PM10/PM2.5	99.94%	Mfg.	S-05-02	3	14,000	N/D	160	Ambient	46	36
							C-05-01	Dry Filters	GFS Wave	20"x20"x2"	PM/PM10/PM2.5	99.94%	Mfg.	S-05-03	3	14,000	N/D	160	Ambient	46	36
							C-05-01	Dry Filters	GFS Wave	20"x20"x2"	PM/PM10/PM2.5	99.94%	Mfg.	S-05-04	3	14,000	N/D	160	Ambient	46	36
Existing Operations																					
Insig.	Welding Operations - Oshkosh							Fabric Filter	TBD	TBD	PM/PM10/PM2.5	99.0%	Engineering judgement		N/D	N/D	N/D	N/D	N/D	N/D	N/D
Insig.	Welding Operations - Pierce							Fabric Filter	TBD	TBD	PM/PM10/PM2.5	99.0%	Engineering judgement		N/D	N/D	N/D	N/D	N/D	N/D	N/D
06	Emergency Generator	Cummins	GGKD-5564831 (150 kW)		1.95	Natural Gas		N/A	N/A	N/A	N/A	N/A	N/A	S-06-01	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Insig.	Eight (8) Heating/Cooling Units			8	1.00	Natural Gas		N/A	N/A	N/A	N/A	N/A	N/A		N/D	N/D	N/D	N/D	N/D	N/D	N/D
Insig.	Two (2) Heating/Cooling Units			2	3.00	Natural Gas		N/A	N/A	N/A	N/A	N/A	N/A		N/D	N/D	N/D	N/D	N/D	N/D	N/D
Miscellaneous (new)																					
Insig.	40 GPM Wastewater Treatment System	Alar	Custom																		
Insig.	30 GPM Reverse Osmosis System																				
Insig.	Paint Circulation System With Graco Smart Kitchen																				

TABLE B-2
INSIGNIFICANT ACTIVITIES - SUMMARY 08-31-2023
JLG INDUSTRIES, INC. - JEFFERSON CITY, TN

Process/Source	State Exemption Rule	Exemption Description
Miscellaneous Small Natural Gas Combustion Sources	TN APC Rule 1200-3-9-.04(2)(a)(3)	PTE < 5 tpy for criteria pollutants and 1000 lb/yr HAPs.
Welding Operations	TN APC Rule 1200-3-9-.04(2)(a)(3)	PTE < 5 tpy for criteria pollutants and 1000 lb/yr HAPs.
Rust Inhibitor Application	TN APC Rule 1200-3-9-.04(2)(a)(3)	PTE < 5 tpy for criteria pollutants and 1000 lb/yr HAPs.
Machine coolant	TN APC Rule 1200-3-9-.04(2)(a)(3)	PTE < 5 tpy for criteria pollutants and 1000 lb/yr HAPs.
Laser Cutting Operations	TN APC Rule 1200-3-9-.04(4)(b)) 1200	The air contaminant sources listed in parts 1200-3-9-.04(5)(f), excluding parts 1 and 2; 1. through 120. Laser trimmers using dust collection to prevent fugitive emissions.
Single stack baghouse which controls emissions from laser cutting operations	TN APC Rule 1200-3-9-.04(4)(d)(2)	PTE < 5 tpy for criteria pollutants and 1000 lb/yr HAPs.
JLG Painting	TN APC Rule 1200-3-9-.04(2)(a)(3)	PTE < 5 tpy for criteria pollutants and 1000 lb/yr HAPs.
JLG Storage Tanks	TN APC Rule 1200-3-9-.04(4)(d)(12)	All storage tanks with a capacity less than 10,000 gallons and all process tanks with a capacity less than 3,000 gallons.
JLG Diesel Tank	TN APC Rule 1200-3-9-.04(4)(d)(14)	Diesel fuel or fuel oil storage tanks with a capacity of forty thousand (40,000) gallons or less.
JLG Hydraulic Oil Tank	TN APC Rule 1200-3-9-.04(2)(a)(3)	PTE < 5 tpy for criteria pollutants and 1000 lb/yr HAPs.

ATTACHMENT C PROCESS FLOW DIAGRAM



Frame Fabrication – Hang – Blast – Wash – Dry –Primer – Flash – Topcoat – Flash – Cure Oven – Assembly
Boom Fabrication – Hang – Wash – Dry –Primer – Flash – Topcoat – Flash – Cure Oven – Assembly

Attachment C
Lift Surface Coating Operations
JLG Industries, Inc.
Jefferson City, TN Plant

ATTACHMENT D
EMISSIONS SPREADSHEETS

**TABLE D-1
FACILITY POTENTIAL EMISSIONS
JLG INDUSTRIES, INC. - JEFFERSON CITY, TN 08-31-2023**

Source ID	Source Description	PM/PM10/PM2.5		SO2		NOx		VOC		CO		HAPs		CO2		CH4		N2O		CO2e	
		(lbs/hr)	(tons/yr)	(lbs/hr)	(tons/yr)	(lbs/hr)	(tons/yr)	(lbs/hr)	(tons/yr)	(lbs/hr)	(tons/yr)	(lbs/hr)	(tons/yr)	(lbs/hr)	(tons/yr)	(lbs/hr)	(tons/yr)	(lbs/hr)	(tons/yr)	(lbs/hr)	(tons/yr)
New Operations																					
01	Shot Blast Booth #1	2.57	11.26																		
Insig.	Pretreatment Wash #1 - Combustion	0.06	0.24	0.00	0.02	0.74	3.22	0.04	0.18	0.62	2.71	Neg.	Neg.	877.33	3842.70	1.65E-02	0.07	1.65E-03	7.24E-03	878.23	3846.67
	Moisture Drying Oven #1 - Combustion	0.03	0.11	0.00	0.01	0.34	1.50	0.02	0.08	0.29	1.26	Neg.	Neg.	409.42	1793.26	0.01	3.38E-02	7.72E-04	3.38E-03	409.84	1,795.11
02	Primer Booth #1/Primer Flash Tunnel #1 - Surface Coating	2.31	10.14					22.10	96.82			1.11	4.84								
	Primer Booth #1/Primer Flash Tunnel #1 - Combustion	0.02	0.08	0.00	0.01	0.25	1.07	0.01	0.06	0.21	0.90	Neg.	Neg.	292.44	1280.9	0.01	2.41E-02	5.51E-04	2.41E-03	292.74	1,282.22
03	Topcoat Booth #1/Topcoat Flash Tunnel #1 - Surface Coating	2.31	10.14					22.10	96.82			1.11	4.84								
	Topcoat Booth #1/Topcoat Flash Tunnel #1 - Combustion	0.02	0.08	0.00	0.01	0.25	1.07	0.01	0.06	0.21	0.90	Neg.	Neg.	292.44	1280.9	0.01	2.41E-02	5.51E-04	2.41E-03	292.74	1,282.22
04	Paint Cure Oven #1 - Combustion	0.04	0.16	0.00	0.01	0.49	2.15	0.03	0.12	0.41	1.80	Neg.	Neg.	584.89	2561.80	1.10E-02	4.83E-02	1.10E-03	4.83E-03	585.49	2564.45
05	Off-Line Touch Up Booth/Oven #1 - Surface Coating	4.80	21.02					0.09	0.38			0.00	0.02								
	Off-Line Touch Up Booth/Oven #1 - Combustion	0.04	0.20	0.00	0.02	0.59	2.58	0.03	0.14	0.49	2.16	Neg.	Neg.	701.86	3,074.16	1.32E-02	5.79E-02	1.32E-03	5.79E-03	702.59	3,077.33
Existing Operations																					
Insig.	Welding Operations - Oshkosh	Neg.	Neg.									Neg.	Neg.								
Insig.	Welding Operations - Pierce	Neg.	Neg.									Neg.	Neg.								
06	Emergency Generator	0.04	0.01	0.00	0.00	4.43	1.11	0.06	0.01	7.26	1.82	0.00	0.00	228.34	57.08	4.30E-03	0.00	4.30E-04	1.08E-04	228.58	57.14
Insig.	Eight (8) Heating/Cooling Units	0.06	0.26	0.00	0.02	0.78	3.44	0.04	0.19	0.66	2.89	Neg.	Neg.	935.82	4,098.88	1.76E-02	0.08	1.76E-03	7.72E-03	936.78	4,103.11
Insig.	Two (2) Heating/Cooling Units	0.04	0.20	0.00	0.02	0.59	2.58	0.03	0.14	0.49	2.16	Neg.	Neg.	701.86	3,074.16	1.32E-02	0.06	1.32E-03	5.79E-03	702.59	3,077.33
Miscellaneous (new)																					
Insig.	40 GPM Wastewater Treatment System	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Insig.	30 GPM Reverse Osmosis System	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Insig.	Paint Circulation System With Graco Smart Kitchen	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total		12.34	53.91	0.03	0.11	8.45	18.71	44.57	194.99	10.64	16.60	2.21	9.70	5,024.40	21,063.84	0.09	0.40	0.01	0.04	5,029.59	21,085.59

TABLE D-2
SURFACE COATING OPERATIONS - POTENTIAL EMISSIONS
JLG INDUSTRIES, INC. - JEFFERSON CITY, TN 08-31-2023

Source	Frames (#/week)	Booms (#/week)	Material	Frames (gal/frame)	Booms (gal/boom)	Material Throughput					VOC Content ¹ (lbs/gal)	HAP Content (wt % of VOC)	Operating Schedule (hr/yr)	VOC Emissions		HAP Emissions	
						gal/hr	gal/day	gal/week	gal/month	(gal/yr)				(lbs/hr)	(tons/yr)	(lbs/hr)	(tons/yr)
Primer Booth - 100%	375	1,313	Primer (as applied)	1.00	0.50	6.12	146.92	1031.25	4468.75	53,625	3.50	5.0%	8,760	21.43	93.84	1.07	4.69
			Line Flushing Solvent	0.32	0.16	1.94	46.53	326.60	1415.25	16,983	1.75	5.0%	8,760	0.68	2.97	0.03	0.15
Total										70,608			8,760	22.10	96.82	1.11	4.84
Primer Booth - 80%	300	1,050	Primer (as applied)	1.00	0.50	4.90	117.53	825.00	3575.00	42,900	3.50	5.0%	8,760	17.14	75.08	0.86	3.75
			Line Flushing Solvent	0.32	0.16	1.55	37.22	261.28	1132.20	13,586	1.75	5.0%	8,760	0.54	2.38	0.03	0.12
Total										56,486			8,760	17.68	77.45	0.88	3.87
Topcoat Booth - 100%	375	1,313	Topcoat (as applied)	1.00	0.50	6.12	146.92	1031.25	4468.75	53,625	3.50	5.0%	8,760	21.43	93.84	1.07	4.69
			Line Flushing Solvent	0.32	0.16	1.94	46.53	326.60	1415.25	16,983	1.75	5.0%	8,760	0.68	2.97	0.03	0.15
Total										70,608			8,760	22.10	96.82	1.11	4.84
Topcoat Booth - 80%	300	1,050	Topcoat (as applied)	1.00	0.50	4.90	117.53	825.00	3575.00	42,900	3.50	5.0%	8,760	17.14	75.08	0.86	3.75
			Line Flushing Solvent	0.32	0.16	1.55	37.22	261.28	1132.20	13,586	1.75	5.0%	8,760	0.54	2.38	0.03	0.12
Total										56,486			8,760	17.68	77.45	0.88	3.87
Touchup Booth 100%	50		Touchup (as applied)	0.08		0.02	0.57	4.00	17.33	208	3.50	5.0%	8,760	0.08	0.36	0.00	0.02
			Line Flushing Solvent	0.03	0.00	0.01	0.18	1.27	5.49	66	1.75	5.0%	8,760	0.00	0.01	0.00	0.00
Total										274			8,760	0.09	0.38	0.00	0.02
Touchup Booth - 80%	40		Touchup (as applied)	0.08		0.02	0.46	3.20	13.87	166	3.50	5.0%	8,760	0.07	0.29	0.00	0.01
			Line Flushing Solvent	0.03	0.00	0.01	0.14	1.01	4.39	53	1.75	5.0%	8,760	0.00	0.01	0.00	0.00
Total										219			8,760	0.07	0.30	0.00	0.02
All Booths - 100%														44.29	194.01	2.21	9.70
All Booths - 80%														35.44	155.21	1.77	7.76

Hourly daily weekly monthly throughputs

Primer, topcoat and gun flush VOC content based on:

Primer: 3.5 lbs/gal coating per 1200-03-18-20 Coating of Miscellaneous Metal Parts (Air Dried Coatings/Extreme Performance Coatings)

Topcoat: 3.5 lbs/gal coating per 1200-03-18-20 Coating of Miscellaneous Metal Parts (Air Dried Coatings/Extreme Performance Coatings)

Line Flushing Solvent: BRENNTAG JLG BLEND (Current VOC content 1.74 lbs/gal)

Primer, topcoat and gun flush HAP content based on:

Primer: PPG SPU71866E 2.8 VOC YELLOW PRIMER (Actual HAP content is 0.5%)

Topcoat: SPU71766A JLG ORANGE (Actual HAP content 0.06%)

Line Flushing Solvent: BRENNTAG JLG BLEND (Actual HAP content 0.0%)

Coating VOC/HAP emission based on 100% emission rate.

Gun flushing solvent VOC emissions based on 20% emission rate (80% is sent off-site for disposal).

TABLE D-3
POTENTIAL PM EMISSIONS - COATING AND BLAST OPERATIONS
JLG INDUSTRIES, INC. - JEFFERSON CITY, TN 08-31-2023

Source ID	Source	Maximum Flowrate (scfm)	Exhaust Concentration (gr/scf)	Maximum Annual Hours of Operation	PM Emission Rates	
					lb/hr	ton/yr
01	Shot Blast Booth	30,000	0.01	8,760	2.57	11.26
02	Primer Booth	27,000	0.01	8,760	2.31	10.14
03	Topcoat Booth	27,000	0.01	8,760	2.31	10.14
05	Touch-up Booth	56,000	0.01	8,760	4.80	21.02
Total	Total				9.43	52.56

**TABLE D-4
NATURAL GAS COMBUSTION - EXTERNAL COMBUSTION
JLG INDUSTRIES, INC. - JEFFERSON CITY, TN 08-31-2023**

Source ID	Source Description	Manufacturer	Model Number	# Burners	MMBtu Each	Total MMBtu/hr	Max. Operating Schedule	Emission Factors (Ext. Comb. - lb/MMcf, Int. Comb - lbs/MMBtu) ¹					PM/PM10/PM2.5		SO2		NOx		VOC		CO	
								PM/PM10/PM2.5	SO2	NOx	VOC	CO	(lbs/hr)	(tons/yr)	(lbs/hr)	(tons/yr)	(lbs/hr)	(tons/yr)	(lbs/hr)	(tons/yr)	(lbs/hr)	(tons/yr)
New Operations																						
01	Shot Blast Booth #1	Blast Cleaning Technologies	M12-108x90	N/A	N/A																	
Insig.	Pretreatment Wash #1	Belco Industries Incorporated	Custom	1	5.00	5.00	8,760	7.6	0.6	100	5.5	84	0.04	0.16	2.94E-03	0.01	0.49	2.15	0.03	0.12	0.41	1.80
				1	2.50	2.50	8,760	7.6	0.6	100	5.5	84	0.02	0.08	1.47E-03	0.01	0.25	1.07	0.01	0.06	0.21	0.90
	Moisture Drying Oven #1	Belco Industries Incorporated	Custom	1	3.50	3.50	8,760	7.6	0.6	100	5.5	84	0.03	0.11	2.06E-03	0.01	0.34	1.50	0.02	0.08	0.29	1.26
02	Primer Booth #1	Belco Industries Incorporated	#DTPDF5036	1	2.50	2.50	8,760	7.6	0.6	100	5.5	84	0.02	0.08	1.47E-03	0.01	0.25	1.07	0.01	0.06	0.21	0.90
	Primer Flash Tunnel #1	Belco Industries Incorporated																				
03	Topcoat Booth #1	Belco Industries Incorporated	#DTPDF5036	1	2.50	2.50	8,760	7.6	0.6	100	5.5	84	0.02	0.08	1.47E-03	0.01	0.25	1.07	0.01	0.06	0.21	0.90
	Topcoat Flash Tunnel	Belco Industries Incorporated																				
04	Paint Cure Oven #1	Belco Industries Incorporated	33.6' L x 22.6'H x 72'L	1	2.50	2.50	8,760	7.6	0.6	100	5.5	84	0.02	0.08	1.47E-03	0.01	0.25	1.07	0.01	0.06	0.21	0.90
				1	2.50	2.50	8,760	7.6	0.6	100	5.5	84	0.02	0.08	1.47E-03	0.01	0.25	1.07	0.01	0.06	0.21	0.90
05	Off-Line Touch Up Booth/Oven #1	GFS	16' W x 14' H x 70' L	2	3.00	6.00	8,760	7.6	0.6	100	5.5	84	0.04	0.20	3.53E-03	0.02	0.59	2.58	0.03	0.14	0.49	2.16
Existing Operations																						
Insig.	Welding Operations - Oshkosh																					
Insig.	Welding Operations - Pierce																					
06	Emergency Generator	Cummins	GGKD-5564831 (150 kW)	1	1.95	1.95	500	1.86E-02	5.88E-04	2.27	2.96E-02	3.72	0.04	0.01	1.15E-03	2.87E-04	4.43	1.11	0.06	0.01	7.26	1.82
	Insig. Eight (8) Heating/Cooling Units			8	1.00	8.00	8,760	7.6	0.6	100	5.5	84	0.06	0.26	4.71E-03	0.02	0.78	3.44	0.04	0.19	0.66	2.89
	Insig. Two (2) Heating/Cooling Units			2	3.00	6.00	8,760	7.6	0.6	100	5.5	84	0.04	0.20	3.53E-03	0.02	0.59	2.58	0.03	0.14	0.49	2.16
Miscellaneous (new)																						
Insig.	40 GPM Wastewater Treatment System	Alar	Custom																			
Insig.	30 GPM Reverse Osmosis System																					
Insig.	Paint Circulation System With Graco Smart Kitchen																					
	Total												0.34	1.35	0.03	0.11	8.45	18.71	0.28	0.98	10.64	16.60

¹Emission factors for natural gas combustions per EPA AP-42 (Section 1.4, Boilers 7/99 and Section 3.2 Natural Gas-Fired IC Engines 7/90)

Source ID	Source Description	Manufacturer	Model Number	# Burners	MMBtu Each	Total MMBtu/hr	Max. Operating Schedule	Emission Factors (lb/MMBtu) ¹			CO2		CH4		N2O		CO2e	
								CO2	CH4	N2O	(lbs/hr)	(tons/yr)	(lbs/hr)	(tons/yr)	(lbs/hr)	(tons/yr)	(lbs/hr)	(tons/yr)
New Operations																		
01	Shot Blast Booth #1	Blast Cleaning Technologies	M12-108x90	N/A	N/A													
	Insig. Pretreatment Wash #1	Belco Industries Incorporated	Custom	1	5.00	5.00	8,760	116.98	0.00220462	0.000220462	584.89	2561.80	1.10E-02	0.05	1.10E-03	4.83E-03	585.49	2564.45
				1	2.50	2.50	8,760	116.98	0.00220462	0.000220462	292.44	1280.90	5.51E-03	0.02	5.51E-04	2.41E-03	292.74	1282.22
	Moisture Drying Oven #1	Belco Industries Incorporated	Custom	1	3.50	3.50	8,760	116.98	0.00220462	0.000220462	409.42	1793.26	7.72E-03	0.03	7.72E-04	3.38E-03	409.84	1795.11
02	Primer Booth #1	Belco Industries Incorporated	#DTPDF5036	1	2.50	2.50	8,760	116.98	0.00220462	0.000220462	292.44	1280.90	5.51E-03	0.02	5.51E-04	2.41E-03	292.74	1282.22
	Primer Flash Tunnel #1	Belco Industries Incorporated																
03	Topcoat Booth #1	Belco Industries Incorporated	#DTPDF5036	1	2.50	2.50	8,760	116.98	0.00220462	0.000220462	292.44	1280.90	5.51E-03	0.02	5.51E-04	2.41E-03	292.74	1282.22
	Topcoat Flash Tunnel	Belco Industries Incorporated																
04	Paint Cure Oven #1	Belco Industries Incorporated	33.6' L x 22.6'H x 72'L	1	2.50	2.50	8,760	116.98	0.00220462	0.000220462	292.44	1280.90	5.51E-03	0.02	5.51E-04	2.41E-03	292.74	1282.22
				1	2.50	2.50	8,760	116.98	0.00220462	0.000220462	292.44	1280.90	5.51E-03	0.02	5.51E-04	2.41E-03	292.74	1282.22
05	Off-Line Touch Up Booth/Oven #1	GFS	16' W x 14' H x 70' L	2	3.00	6.00	8,760.00	116.9771372	0.00220462	0.000220462	701.8628232	3074.159166	0.01322772	0.057937414	0.001322772	0.005793741	702.5877023	3077.334136
Existing Operations																		
	Insig. Welding Operations - Oshkosh																	
	Insig. Welding Operations - Pierce																	
06	Emergency Generator	Cummins	GGKD-5564831 (150 kW)	1	1.95	1.95	500	116.9771372	0.00220462	0.000220462	228.3393718	57.08484295	0.004303418	0.001075855	0.000430342	0.000107585	228.5751991	57.14379978
	Insig. Eight (8) Heating/Cooling Units			8	1.00	8.00	8,760	116.98	0.00220462	0.000220462	935.82	4098.88	1.76E-02	0.08	1.76E-03	7.72E-03	936.78	4103.11
	Insig. Two (2) Heating/Cooling Units			2	3.00	6.00	8,760	116.98	0.00220462	0.000220462	701.86	3074.16	1.32E-02	0.06	1.32E-03	5.79E-03	702.59	3077.33
Miscellaneous (new)																		
	Insig. 40 GPM Wastewater Treatment System	Alar	Custom															
	Insig. 30 GPM Reverse Osmosis System																	
	Insig. Paint Circulation System With Graco Smart Kitchen																	

¹Emission factors per 40 CFR Part 98.

ATTACHMENT E
SDS INFOMRMATION

PPG Industries, Inc.

Environmental Data Sheet

Friday, May 07, 2021

Customer: JLG
McConnellsburg , PA
USA

PRODUCT DESCRIPTION: SPU71866E 3360022 2.8 VOC YELLOW PRIMER

<u>PRODUCT ID</u>	<u>PARTS PER BLEND</u>
GXH1080	1
SPU71866E	7

PRODUCT PHYSICAL CHARACTERISTICS:

WEIGHT PER GALLON:		12.24 lb/gal
DENSITY OF ORGANIC SOLVENT BLEND:		7.03 lb/gal
	<u>Weight</u>	<u>Volume</u>
NON-VOLATILE:	71.3%	49.9%
VOLATILE:	28.7%	50.1%
PERCENT OF WATER:	0.1%	0.1%
PERCENT OF EXEMPTS:	9.7%	17.7%

VOC INFORMATION:

VOC/GAL LESS WATER (LESS EXEMPTS):	2.83 lb/gal	339 g/L
ACTUAL VOC/GAL (WITH WATER WITH EXEMPTS):	2.32 lb/gal	278 g/L
VOC PER GALLON OF SOLIDS:	4.65 lb/gal	557 g/L
VOC PER POUND OF SOLIDS:	0.27 lb/lb	

Product is photochemically reactive as per SCAQMD rule 102

VOLATILE COMPOSITION: PERCENT OF TOTAL FORMULA:

<u>Component</u>	<u>Name</u>	<u>Weight</u>	<u>Volume</u>
110-43-0	Methyl amyl ketone	6.0	11.1
123-86-4	n-Butyl acetate	7.8	12.9
1330-20-7	Xylenes	0.5	0.9
64742-95-6	Solvent naphtha, petroleum, light aromatic	0.5	0.8
67-64-1	ACETONE	9.7	17.7
763-69-9	ETHYL-3-ETHOXYPROPIONATE	3.5	5.4
95-63-6	1,2,4-Trimethylbenzene	0.3	0.5

REGULATORY INFORMATION BASED ON 100 GALLONS DEFAULT

<u>Component</u>	<u>Name</u>	<u>lb</u>	<u>kg</u>	<u>HAPS</u>	<u>SARA</u>
95-63-6	1,2,4-Trimethylbenzene	3.43	1.56	No	Yes

POUND OF ORGANIC HAPS PER POUND OF SOLIDS: 0.00

POUND OF ORGANIC HAPS PER GALLON OF SOLIDS: 0.00

POUND OF ORGANIC HAPS PER GALLON OF PRODUCT: 0.00

PERCENT OF ORGANIC HAPS (VHAP): 0.0%

DISCLAIMER

This Environmental Data Sheet is not intended to replace the product's Material Safety Data Sheet.

The data contained in this Environmental Data Sheet is based on information provided to PPG by its suppliers and PPG's knowledge of PPG product formulations. PPG makes no representation or warranty regarding the accuracy of supplier furnished information or that this information or data will not change.

The information in this Environmental Data Sheet is not intended to and does not create legal rights or obligations. This information is provided for the sole use of PPG customers and is not for disclosure to competitors of PPG. PPG customers have an independent obligation to determine proper use of the information and that their use of the information is consistent with federal, state and local laws, rules and regulations.

Trace constituents present at levels less than 0.01 lb or kg are not included in the Regulatory Information section of this Environmental Data Sheet. Volatile HAPS present at levels less than 0.1% by weight for carcinogens and 1.0% for non-carcinogens will not be shown or will be indicated by a "No" in the Regulatory Section (under HAPS) of this Environmental Data Sheet.

Trace volatiles present at levels less than 0.1% by weight are not included in the Volatile Section of this Environmental Data Sheet.

Chemical compounds generated as a result of the curing process of this coating are not included on this Environmental Data Sheet.

The USEPA listing of VOC exempt compounds [40CFR51.000(s)] is used in calculating VOC values.

PPG Industries, Inc.

Environmental Data Sheet
Wednesday, September 25, 2013

Customer: JLG
McConnellsburg, PA
USA

PRODUCT DESCRIPTION: SPU71766A : GXH1080

<u>PRODUCT ID</u>	<u>PARTS PER BLEND</u>
SPU71766A	6
GXH1080	1

PRODUCT PHYSICAL CHARACTERISTICS:

WEIGHT PER GALLON:	8.76 lb/gal
DENSITY OF ORGANIC SOLVENT BLEND:	7.04 lb/gal
	<u>Weight</u> <u>Volume</u>
NON-VOLATILE:	56.85% 46.15%
VOLATILE:	43.15% 53.85%
PERCENT OF WATER:	0.16% 0.17%
PERCENT OF EXEMPTS:	18.28% 23.36%

VOC INFORMATION:

VOC/GAL LESS WATER (LESS EXEMPTS):	2.83 lb/gal	339.11 g/L
ACTUAL VOC/GAL (WITH WATER WITH EXEMPTS):	2.16 lb/gal	258.83 g/L
VOC PER GALLON OF SOLIDS:	4.69 lb/gal	561.99 g/L
VOC PER POUND OF SOLIDS:	0.43 lb/lb	

Product is photochemically reactive as per SCAQMD rule 102

VOLATILE COMPOSITION: PERCENT OF TOTAL FORMULA:

<u>Component</u>	<u>Name</u>	<u>Weight</u>	<u>Volume</u>
108-65-6	1-METHOXY-2-PROPYL ACETATE	0.14	0.16
110-43-0	HEPTAN-2-ONE	14.85	19.50
123-54-6	PENTANE-2,4-DIONE / ACETYLACETONE	2.90	3.11
123-86-4	N-BUTYL ACETATE	1.49	1.77
1330-20-7	XYLENES	0.04	0.05
540-88-5	TERT-BUTYL ACETATE	8.14	9.94
624-54-4	PENTYL PROPIONATE	0.49	0.60
64-19-7	ACETIC ACID	0.09	0.09

64742-95-6	SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC	1.32	1.59
67-64-1	ACETONE	10.02	13.15
763-69-9	ETHYL-3-ETHOXYPROPIONATE	2.68	2.97
7732-18-5	WATER	0.16	0.17
95-63-6	1,2,4-TRIMETHYLBENZENE	0.48	0.57
98-82-8	CUMENE	0.02	0.03

REGULATORY INFORMATION BASED ON 100 GALLONS DEFAULT

<u>Component</u>	<u>Name</u>	<u>lb</u>	<u>kg</u>	<u>HAPS</u>	<u>SARA</u>
540-88-5	EXEMPT VOC, TERT-BUTYL ACETATE	71.36	32.37	No	No
95-63-6	1,2,4-TRIMETHYLBENZENE	4.18	1.90	No	Yes
98-82-8	CUMENE	0.20	0.09	Yes	No

POUND OF ORGANIC HAPS PER POUND OF SOLIDS: 0.00
 POUND OF ORGANIC HAPS PER GALLON OF SOLIDS: 0.00
 POUND OF ORGANIC HAPS PER GALLON OF PRODUCT: 0
 PERCENT OF ORGANIC HAPS (VHAP): 0.00%

DISCLAIMER

This Environmental Data Sheet is not intended to replace the product's Material Safety Data Sheet.

The data contained in this Environmental Data Sheet is based on information provided to PPG by its suppliers and PPG's knowledge of PPG product formulations. PPG makes no representation or warranty regarding the accuracy of supplier furnished information or that this information or data will not change.

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Trace constituents present at levels less than 0.01 lb or kg are not included in the Regulatory Information section of this Environmental Data Sheet. Volatile HAPS present at levels less than 0.1% by weight for carcinogens and 1.0% for non-carcinogens will not be shown or will be indicated by a "No" in the Regulatory Section (under HAPS) of this Environmental Data Sheet.

Trace volatiles present at levels less than 0.1% by weight are not included in the Volatile Section of this Environmental Data Sheet.

Chemical compounds generated as a result of the curing process of this coating are not included on this Environmental Data Sheet.

The USEPA listing of VOC exempt compounds [40CFR51.000(s)] is used in calculating VOC values.

Under USEPA regulation 40CFR51.000(s), t-butyl acetate is not a VOC for purposes of VOC emissions limitations or VOC content requirements. It is a VOC for purposes of all recordkeeping, emissions reporting, photochemical dispersion modeling and inventory requirements.

Page 3 of 3

Page 3 of 3

1. Identification

Other means of identification None known.
 Product identifier **JLG BLEND**
 Recommended use ALL PROPER AND LEGAL PURPOSES
 Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information
Manufacturer

Company name Brenntag Northeast, LLC
 Address 81 West Huller Lane
 Reading, PA 19605
 Telephone 610-926-4151
 E-mail Not available.
 Emergency phone number 800-424-9300 Chemtrec

2. Hazard(s) identification

Physical hazards Flammable liquids Category 2
 Health hazards Serious eye damage/eye irritation Category 2A
 Reproductive toxicity Category 1
 Specific target organ toxicity, single exposure Category 3 narcotic effects
 Aspiration hazard Category 1

Environmental hazards Not classified.

OSHA defined hazards Not classified.

Label elements


Signal word **Danger**

Hazard statement Highly flammable liquid and vapor. May be fatal if swallowed and enters airways. Causes serious eye irritation. May cause drowsiness or dizziness. May damage fertility or the unborn child.

Precautionary statement
Prevention

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection.

Response

If swallowed: Immediately call a poison center/doctor. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If exposed or concerned: Get medical advice/attention. If eye irritation persists: Get medical advice/attention. In case of fire: Use appropriate media to extinguish.

Storage

Keep cool. Store in a well-ventilated place. Keep container tightly closed. Store locked up.

Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC)

Static accumulating flammable liquid can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite liquid and vapor. May cause flash fire or explosion.

Supplemental information

19.9% of the mixture consists of component(s) of unknown acute oral toxicity. 19.9% of the mixture consists of component(s) of unknown acute dermal toxicity. 99.2% of the mixture consists of component(s) of unknown acute inhalation toxicity.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
2-PROPANONE		67-64-1	71.5
NAPHTHA (PETROLEUM), HYDROTREATED LIGHT		64742-49-0	19.9
2-PROPANOL		67-63-0	7.8
2-PYRROLIDINONE, 1-METHYL-		872-50-4	0.8

4. First-aid measures

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a poison center or doctor/physician if you feel unwell.
Skin contact	Take off immediately all contaminated clothing. Rinse skin with water/shower. Get medical attention if irritation develops and persists.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.
Ingestion	Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
Most important symptoms/effects, acute and delayed	Aspiration may cause pulmonary edema and pneumonitis. May cause drowsiness and dizziness. Headache. Nausea, vomiting. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim under observation. Symptoms may be delayed.
General information	Take off all contaminated clothing immediately. IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Alcohol resistant foam. Carbon dioxide (CO2). Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	Vapors may form explosive mixtures with air. Vapors may travel considerable distance to a source of ignition and flash back. This product is a poor conductor of electricity and can become electrostatically charged. If sufficient charge is accumulated, ignition of flammable mixtures can occur. To reduce potential for static discharge, use proper bonding and grounding procedures. This liquid may accumulate static electricity when filling properly grounded containers. Static electricity accumulation may be significantly increased by the presence of small quantities of water or other contaminants. Material will float and may ignite on surface of water. During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	Highly flammable liquid and vapor.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Wear appropriate protective equipment and clothing during clean-up. Avoid breathing mist/vapors. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Use appropriate containment to avoid environmental contamination. Transfer by mechanical means such as vacuum truck to a salvage tank or other suitable container for recovery or safe disposal. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
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Methods and materials for containment and cleaning up

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. Take precautionary measures against static discharge. Use only non-sparking tools.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Following product recovery, flush area with water.

Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Environmental precautions

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS. Avoid discharge into drains, water courses or onto the ground. Use appropriate containment to avoid environmental contamination.

7. Handling and storage

Precautions for safe handling

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. When using do not smoke. Explosion-proof general and local exhaust ventilation. Minimize fire risks from flammable and combustible materials (including combustible dust and static accumulating liquids) or dangerous reactions with incompatible materials. Handling operations that can promote accumulation of static charges include but are not limited to: mixing, filtering, pumping at high flow rates, splash filling, creating mists or sprays, tank and container filling, tank cleaning, sampling, gauging, switch loading, vacuum truck operations. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. Avoid breathing mist/vapors. Avoid contact with eyes. Avoid prolonged exposure. Pregnant or breastfeeding women must not handle this product. Should be handled in closed systems, if possible. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Observe good industrial hygiene practices.

For additional information on equipment bonding and grounding, refer to the Canadian Electrical Code in Canada, (CSA C22.1), or the American Petroleum Institute (API) Recommended Practice 2003, "Protection Against Ignitions Arising out of Static, Lightning, and Stray Currents" or National Fire Protection Association (NFPA) 77, "Recommended Practice on Static Electricity" or National Fire Protection Association (NFPA) 70, "National Electrical Code".

Conditions for safe storage, including any incompatibilities

Store locked up. Keep away from heat, sparks and open flame. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Eliminate sources of ignition. Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity. Store in a cool, dry place out of direct sunlight. Store in tightly closed container. Store in a well-ventilated place. Keep in an area equipped with sprinklers. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
2-PROPANOL (CAS 67-63-0)	PEL	980 mg/m3
		400 ppm
2-PROPANONE (CAS 67-64-1)	PEL	2400 mg/m3
		1000 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value
2-PROPANOL (CAS 67-63-0)	STEL	400 ppm
	TWA	200 ppm
2-PROPANONE (CAS 67-64-1)	STEL	500 ppm
	TWA	250 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
2-PROPANOL (CAS 67-63-0)	STEL	1225 mg/m3
		500 ppm
	TWA	980 mg/m3
2-PROPANONE (CAS 67-64-1)		400 ppm
	TWA	590 mg/m3
		250 ppm

US. Workplace Environmental Exposure Level (WEEL) Guides

Components	Type	Value
2-PYRROLIDINONE, 1-METHYL- (CAS 872-50-4)	TWA	40 mg/m3
		10 ppm

Biological limit values**ACGIH Biological Exposure Indices**

Components	Value	Determinant	Specimen	Sampling Time
2-PROPANOL (CAS 67-63-0)	40 mg/l	Acetone	Urine	*
2-PROPANONE (CAS 67-64-1)	25 mg/l	Acetone	Urine	*
2-PYRROLIDINONE, 1-METHYL- (CAS 872-50-4)	100 mg/l	5-Hydroxy-N-methyl-2-pyrrolidone	Urine	*

* - For sampling details, please see the source document.

Exposure guidelines**US - California OELs: Skin designation**

2-PYRROLIDINONE, 1-METHYL- (CAS 872-50-4) Can be absorbed through the skin.

US WEEL Guides: Skin designation

2-PYRROLIDINONE, 1-METHYL- (CAS 872-50-4) Can be absorbed through the skin.

Appropriate engineering controls

Explosion-proof general and local exhaust ventilation. Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewash station and safety shower.

Individual protection measures, such as personal protective equipment

The following are recommendations for Personnel Protective Equipment (PPE). The employer/user of this product must perform a Hazard Assessment of the workplace according to OSHA regulations 29 CFR 1910.132 to determine the appropriate PPE for use while performing any task involving potential exposure to this product.

Eye/face protection Chemical respirator with organic vapor cartridge and full facepiece.

Skin protection

Hand protection Wear appropriate chemical resistant gloves.

Other Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.

Respiratory protection Chemical respirator with organic vapor cartridge and full facepiece.

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

Observe any medical surveillance requirements. When using do not smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties**Appearance**

Physical state	Liquid.
Form	Liquid.

Color	CLEAR COLORLESS
Odor	CHARACTERISTIC SOLVENT
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	Not available.
Initial boiling point and boiling range	140.15 °F (60.08 °C) estimated
Flash point	-4.0 °F (-20.0 °C)
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Density	6.46 lbs/gal 0.77 g/ml
Explosive properties	Not explosive.
Flammability class	Flammable IB estimated
Oxidizing properties	Not oxidizing.
Percent volatile	79.3 % estimated
Specific gravity	0.77
VOC	7.8 % estimated

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible materials	Acids. Strong oxidizing agents. Chlorine. Isocyanates.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	May cause drowsiness and dizziness. Headache. Nausea, vomiting. Prolonged inhalation may be harmful.
Skin contact	No adverse effects due to skin contact are expected.

Eye contact	Causes serious eye irritation.	
Ingestion	Droplets of the product aspirated into the lungs through ingestion or vomiting may cause a serious chemical pneumonia.	
Symptoms related to the physical, chemical and toxicological characteristics	Aspiration may cause pulmonary edema and pneumonitis. May cause drowsiness and dizziness. Headache. Nausea, vomiting. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.	
Information on toxicological effects		
Acute toxicity	May be fatal if swallowed and enters airways.	
Components	Species	Test Results
2-PROPANOL (CAS 67-63-0)		
<u>Acute</u>		
Dermal		
LD50	Rabbit	12800 mg/kg
Oral		
LD50	Rat	4.7 g/kg
2-PROPANONE (CAS 67-64-1)		
<u>Acute</u>		
Dermal		
LD50	Rabbit	20000 mg/kg
Oral		
LD50	Rat	5800 mg/kg
2-PYRROLIDINONE, 1-METHYL- (CAS 872-50-4)		
<u>Acute</u>		
Dermal		
LD50	Rabbit	8000 mg/kg
Oral		
LD50	Rat	3914 mg/kg
Skin corrosion/irritation	Due to partial or complete lack of data the classification is not possible.	
Serious eye damage/eye irritation	Causes serious eye irritation.	
Respiratory or skin sensitization		
Respiratory sensitization	Due to partial or complete lack of data the classification is not possible.	
Skin sensitization	Due to partial or complete lack of data the classification is not possible.	
Germ cell mutagenicity	Due to partial or complete lack of data the classification is not possible.	
Carcinogenicity	Due to partial or complete lack of data the classification is not possible.	
IARC Monographs. Overall Evaluation of Carcinogenicity		
Not listed.		
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)		
Not listed.		
US. National Toxicology Program (NTP) Report on Carcinogens		
Not listed.		
Reproductive toxicity	May damage fertility or the unborn child.	
Specific target organ toxicity - single exposure	May cause drowsiness and dizziness.	
Specific target organ toxicity - repeated exposure	Due to partial or complete lack of data the classification is not possible.	
Aspiration hazard	May be fatal if swallowed and enters airways.	
Chronic effects	Prolonged inhalation may be harmful.	
Further information	Acetone has increased the liver toxicity of chemicals, such as, carbon tetrachloride, chloroform and trichloroethylene. Acetone has also increased the lung toxicity of styrene and the toxicity of acrylonitrile and 2,5 hexanedione in laboratory animals. Acetone also appears to inhibit the metabolism and elimination of ethyl alcohol, thereby potentiating its toxicity. Acetone can increase or decrease the toxicity of 1,2-dichlorobenzene, depending on the concentration of Acetone.	

12. Ecological information

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Components		Species	Test Results
2-PROPANOL (CAS 67-63-0)			
Aquatic			
Fish	LC50	Bluegill (<i>Lepomis macrochirus</i>)	> 1400 mg/l, 96 hours
2-PROPANONE (CAS 67-64-1)			
Aquatic			
Crustacea	EC50	Water flea (<i>Daphnia magna</i>)	10294 - 17704 mg/l, 48 hours
Fish	LC50	Rainbow trout, donaldson trout (<i>Oncorhynchus mykiss</i>)	4740 - 6330 mg/l, 96 hours

Persistence and degradability No data is available on the degradability of any ingredients in the mixture.

Bioaccumulative potential

Partition coefficient n-octanol / water (log Kow)

2-PROPANOL	0.05
2-PROPANONE	-0.24
2-PYRROLIDINONE, 1-METHYL-	-0.54

Mobility in soil No data available.

Other adverse effects The product contains volatile organic compounds which have a photochemical ozone creation potential.

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Incinerate the material under controlled conditions in an approved incinerator. Do not incinerate sealed containers. If discarded, this product is considered a RCRA ignitable waste, D001. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	D001: Waste Flammable material with a flash point <140 F The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

UN number	UN1993
UN proper shipping name	FLAMMABLE LIQUIDS, N.O.S. (PETROLEUM NAPHTHA, ISOPROPANOL)
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Packing group	II
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
ERG number	128

Transportation information on packaging may be different from that listed.

IATA

UN number	UN1993
UN proper shipping name	FLAMMABLE LIQUIDS, N.O.S. (PETROLEUM NAPHTHA, ISOPROPANOL)
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Packing group	II
Environmental hazards	No.
ERG Code	128

Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number UN1993
UN proper shipping name FLAMMABLE LIQUID, N.O.S. (2-PROPANONE, 2-PROPANOL)
Transport hazard class(es)
Class 3
Subsidiary risk -
Packing group II
Environmental hazards
Marine pollutant No.
EmS F-E, S-E
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

DOT



IATA; IMDG



15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Toxic Substances Control Act (TSCA)

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

2-PYRROLIDINONE, 1-METHYL- (CAS 872-50-4) 1.0 % Annual Export Notification required.

CERCLA Hazardous Substance List (40 CFR 302.4)

2-PROPANONE (CAS 67-64-1) Listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

Classified hazard categories
Flammable (gases, aerosols, liquids, or solids)
Serious eye damage or eye irritation
Reproductive toxicity
Specific target organ toxicity (single or repeated exposure)
Aspiration hazard
Hazard not otherwise classified (HNOC)

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations**Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Contains component(s) regulated under the Safe Drinking Water Act.**Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number**

2-PROPANONE (CAS 67-64-1) 6532

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

2-PROPANONE (CAS 67-64-1) 35 %WV

DEA Exempt Chemical Mixtures Code Number

2-PROPANONE (CAS 67-64-1) 6532

FEMA Priority Substances Respiratory Health and Safety in the Flavor Manufacturing Workplace

2-PROPANOL (CAS 67-63-0) Low priority

2-PROPANONE (CAS 67-64-1) Low priority

US state regulations**California Proposition 65****WARNING:** This product can expose you to 2-PYRROLIDINONE, 1-METHYL-, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**California Proposition 65 - CRT: Listed date/Developmental toxin**

2-PYRROLIDINONE, 1-METHYL- (CAS 872-50-4) Listed: June 15, 2001

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

2-PROPANOL (CAS 67-63-0)

2-PROPANONE (CAS 67-64-1)

2-PYRROLIDINONE, 1-METHYL- (CAS 872-50-4)

NAPHTHA (PETROLEUM), HYDROTREATED LIGHT (CAS 64742-49-0)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision**Issue date** 03-24-2021**Revision date** 03-24-2021**Version #** 02

Material name: JLG BLEND

238226 Version #: 02 Revision date: 03-24-2021 Issue date: 03-24-2021

Initial Application 08/31/2023

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SDS US

9 / 10

HMIS® ratings

Health: 3*
Flammability: 3
Physical hazard: 0

NFPA ratings

Health: 2
Flammability: 3
Instability: 0

Disclaimer

While Brenntag believes the information contained herein to be accurate, Brenntag makes no representation or warranty, express or implied, regarding, and assumes no liability for, the accuracy or completeness of the information. The Buyer assumes all responsibility for handling, using and/or reselling the Product in accordance with applicable federal, state, and local law. This SDS shall not in any way limit or preclude the operation and effect of any of the provisions of Brenntag's terms and conditions of sale.

Brenntag Northeast, LLC

April 1, 2021

JLG Blend
PC 238226, 68592

Per your request, Brenntag Northeast LLC would like to submit the following Product Data Information for JLG Blend:

JLG Blend Components:	Acetone	73.0 % Weight
	Heptane	18.0 % Weight
	Isopropyl Alcohol	8.0 % Weight
	M-Pyrol	1.0 % Weight

JLG Blend	# / Gal:	6.456
	Weight % Liquid:	100
	Weight % Solid:	0
	Weight % VOC:	27.0
	VOC #/Gal:	1.74
	Weight % HAPS:	0
	HAPS # / Gal:	0.0

Please feel free to contact me if you have any additional questions or comments.

Sincerely,

Steven Clouser

Steven Clouser
Quality Lab Manager

PPG Industries, Inc.

Environmental Data Sheet

Monday, February 24, 2014

Customer: JLG
McConnellsburg, PA
USA

PRODUCT DESCRIPTION: 3360021 SPU71745A Blended

<u>PRODUCT ID</u>	<u>PARTS PER BLEND</u>
SPU71745A	5
GXH1080	1

PRODUCT PHYSICAL CHARACTERISTICS:

WEIGHT PER GALLON:	9.52 lb/gal
DENSITY OF ORGANIC SOLVENT BLEND:	7.01 lb/gal
	<u>Weight</u> <u>Volume</u>
NON-VOLATILE:	64.46% 51.57%
VOLATILE:	35.54% 48.43%
PERCENT OF WATER:	0.06% 0.07%
PERCENT OF EXEMPTS:	10.43% 14.81%

VOC INFORMATION:

VOC/GAL LESS WATER (LESS EXEMPTS):	2.80 lb/gal	335.51 g/L
ACTUAL VOC/GAL (WITH WATER WITH EXEMPTS):	2.38 lb/gal	285.19 g/L
VOC PER GALLON OF SOLIDS:	4.62 lb/gal	553.60 g/L
VOC PER POUND OF SOLIDS:	0.39 lb/lb	

Product is photochemically reactive as per SCAQMD rule 102

VOLATILE COMPOSITION: PERCENT OF TOTAL FORMULA:

<u>Component</u>	<u>Name</u>	<u>Weight</u>	<u>Volume</u>
110-43-0	HEPTAN-2-ONE	14.80	21.11
123-54-6	PENTANE-2;4-DIONE / ACETYLACETONE	1.68	1.95
123-86-4	N-BUTYL ACETATE	2.50	3.24
1330-20-7	XYLENES	0.05	0.06
540-88-5	TERT-BUTYL ACETATE	1.88	2.49
624-54-4	PENTYL PROPIONATE	0.76	0.99
64742-95-6	SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC	1.45	1.90

67-64-1	ACETONE	8.51	12.14
763-69-9	ETHYL-3-ETHOXYPROPIONATE	2.87	3.45
95-63-6	1,2,4-TRIMETHYLBENZENE	0.51	0.66
98-82-8	CUMENE	0.02	0.03

REGULATORY INFORMATION BASED ON 100 GALLONS DEFAULT

<u>Component</u>	<u>Name</u>	<u>lb</u>	<u>kg</u>	<u>HAPS</u>	<u>SARA</u>
540-88-5	EXEMPT VOC, TERT-BUTYL ACETATE	17.89	8.12	No	No
95-63-6	1,2,4-TRIMETHYLBENZENE	4.88	2.21	No	Yes
98-82-8	CUMENE	0.23	0.10	Yes	No

POUND OF ORGANIC HAPS PER POUND OF SOLIDS: 0.00
POUND OF ORGANIC HAPS PER GALLON OF SOLIDS: 0.00
POUND OF ORGANIC HAPS PER GALLON OF PRODUCT: 0
PERCENT OF ORGANIC HAPS (VHAP): 0.00%

DISCLAIMER

This Environmental Data Sheet is not intended to replace the product's Material Safety Data Sheet.

The data contained in this Environmental Data Sheet is based on information provided to PPG by its suppliers and PPG's knowledge of PPG product formulations. PPG makes no representation or warranty regarding the accuracy of supplier furnished information or that this information or data will not change.

The information in this Environmental Data Sheet is not intended to and does not create legal rights or obligations. This information is provided for the sole use of PPG customers and is not for disclosure to competitors of PPG. PPG customers have an independent obligation to determine proper use of the information and that their use of the information is consistent with federal, state and local laws, rules and regulations.

Trace constituents present at levels less than 0.01 lb or kg are not included in the Regulatory Information section of this Environmental Data Sheet. Volatile HAPS present at levels less than 0.1% by weight for carcinogens and 1.0% for non-carcinogens will not be shown or will be indicated by a "No" in the Regulatory Section (under HAPS) of this Environmental Data Sheet.

Trace volatiles present at levels less than 0.1% by weight are not included in the Volatile Section of this Environmental Data Sheet.

Chemical compounds generated as a result of the curing process of this coating are not included on this Environmental Data Sheet.

The USEPA listing of VOC exempt compounds [40CFR51.000(s)] is used in calculating VOC values.

Under USEPA regulation 40CFR51.000(s), **t-butyl** acetate is a not a VOC for purposes of VOC emissions limitations or VOC content requirements. It is a VOC for purposes of all recordkeeping, emissions reporting, photochemical dispersion modeling and inventory requirements.

PPG Industries, Inc.

Environmental Data Sheet

Wednesday, September 04, 2019

Customer: JLG

PRODUCT DESCRIPTION: 3360023 SG BLACK—SPU71748B

<u>PRODUCT ID</u>	<u>PARTS PER BLEND</u>
GXH1080	1
SPU71748B	5

PRODUCT PHYSICAL CHARACTERISTICS:

WEIGHT PER GALLON:	8.49 lb/gal
DENSITY OF ORGANIC SOLVENT BLEND:	6.94 lb/gal
	<u>Weight</u> <u>Volume</u>
NON-VOLATILE:	58.3% 48.8%
VOLATILE:	41.7% 51.2%
PERCENT OF WATER:	0.1% 0.1%
PERCENT OF EXEMPTS:	15.5% 19.4%

VOC INFORMATION:

VOC/GAL LESS WATER (LESS EXEMPTS):	2.75 lb/gal	330 g/L
ACTUAL VOC/GAL (WITH WATER WITH EXEMPTS):	2.22 lb/gal	266 g/L
VOC PER GALLON OF SOLIDS:	4.54 lb/gal	544 g/L
VOC PER POUND OF SOLIDS:	0.45 lb/lb	

Product is photochemically reactive as per SCAQMD rule 102

VOLATILE COMPOSITION: PERCENT OF TOTAL FORMULA:

<u>Component</u>	<u>Name</u>	<u>Weight</u>	<u>Volume</u>
108-65-6	1-METHOXY-2-PROPYL ACETATE	0.3	0.3
110-43-0	Methyl amyl ketone	16.5	21.0
123-54-6	PENTANE-2;4-DIONE / ACETYLACETONE	1.0	1.1
123-86-4	N-BUTYL ACETATE	4.9	5.7
540-88-5	TERT-BUTYL ACETATE	3.6	4.3
624-54-4	PENTYL PROPIONATE	1.1	1.3
64742-95-6	SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC	1.1	1.3
67-64-1	ACETONE	11.8	15.1
80-62-6	Methyl methacrylate	0.1	0.1

95-63-6 1,2,4-TRIMETHYLBENZENE 0.5 0.6

REGULATORY INFORMATION BASED ON 100 GALLONS DEFAULT

<u>Component</u>	<u>Name</u>	<u>lb</u>	<u>kg</u>	<u>HAPS</u>	<u>SARA</u>
540-88-5	EXEMPT VOC, TERT-BUTYL ACETATE	30.59	13.88	No	No
95-63-6	1,2,4-TRIMETHYLBENZENE	4.57	2.07	No	Yes

POUND OF ORGANIC HAPS PER POUND OF SOLIDS: 0.00
 POUND OF ORGANIC HAPS PER GALLON OF SOLIDS: 0.00
 POUND OF ORGANIC HAPS PER GALLON OF PRODUCT: 0.00
 PERCENT OF ORGANIC HAPS (VHAP): 0.0%

DISCLAIMER

This Environmental Data Sheet is not intended to replace the product's Material Safety Data Sheet.

The data contained in this Environmental Data Sheet is based on information provided to PPG by its suppliers and PPG's knowledge of PPG product formulations. PPG makes no representation or warranty regarding the accuracy of supplier furnished information or that this information or data will not change.

The information in this Environmental Data Sheet is not intended to and does not create legal rights or obligations. This information is provided for the sole use of PPG customers and is not for disclosure to competitors of PPG. PPG customers have an independent obligation to determine proper use of the information and that their use of the information is consistent with federal, state and local laws, rules and regulations.

Trace constituents present at levels less than 0.01 lb or kg are not included in the Regulatory Information section of this Environmental Data Sheet. Volatile HAPS present at levels less than 0.1% by weight for carcinogens and 1.0% for non-carcinogens will not be shown or will be indicated by a "No" in the Regulatory Section (under HAPS) of this Environmental Data Sheet.

Trace volatiles present at levels less than 0.1% by weight are not included in the Volatile Section of this Environmental Data Sheet.

Chemical compounds generated as a result of the curing process of this coating are not included on this Environmental Data Sheet.

The USEPA listing of VOC exempt compounds [40CFR51.000(s)] is used in calculating VOC values.

Under USEPA regulation 40CFR51.000(s), t-butyl acetate is a not a VOC for purposes of VOC emissions limitations or VOC content requirements. It is a VOC for purposes of all recordkeeping, emissions reporting, photochemical dispersion modeling and inventory requirements.

ATTACHMENT F EQUIPMENT SPECIFICATIONS

**Att. F1 – Blast Booth Specifications
Att F2 – Coating Line Specifications
Att F3 – Touch-up Booth Specifications**

June 29, 2023

Paul Nero| PSNero@jlg.com

JLG

9138 W Belding Rd

Belding, MI 48809

Proposal No: **PR21-071 REV-F**
Reference: **BCT M12-108x90 Pass-Through Blast System**

We are pleased to provide you with the following proposal for a BCT M12-108x90 Pass-Through Blast System. The following document is meant to give a basic understanding of our systems while outlining the key design features that set our equipment apart from the others.

Some key reasons to consider Blast Cleaning Technologies as your shot blast provider:

- The BCT team has over 300 years of combined blast cleaning experience
BCT has the largest engineering team in North America, equipped with 3-D Solidworks® design software
- The BCT control systems are designed, built and tested in-house
- All BCT's machines are designed and manufactured in the U.S.A.
- BCT utilizes only U.S. foundries to produce the world-class castings for our equipment
- BCT has access to one of the largest North American service operations
- BCT provides critical parts inventory with guaranteed same day shipment

We at BCT aim to offer not only the best equipment, but also world class service and support. All our most current designs and features are outlined within this document for your review.

Please review our proposal and let us know if you have any questions.

Respectfully,

Charles "Parker" Mann

Application Engineer

**BLAST
CLEANING
TECHNOLOGIES**

Direct: [262.649.3786](tel:262.649.3786)

Customer Service: [877.355.7577](tel:877.355.7577) • Fax: [262.785.1066](tel:262.785.1066)

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Application Scope

Product Description

- Product Description: Fabricated Frames and Booms
- Product Material: Steel
- Contaminants: Scale, Light Rust, Weld Spatter
- Contaminants Volume: Light
- Largest Fabrication: 101.5"W x 86"T x 263"L at 13,450 lbs
- Smallest Fabrication: Unspecified
- Parts Temperature at Blast: Ambient

Production Details

- Process Before Blast: Fabrication
- Process After Blast: Chemical Spray
- Cleaning Requirement: SSPC.SP10 Near-White Metal Blast
- Surface Profile Requirement: Unspecified
- Target Line Speed: 3.5 FPM
- Abrasive: Steel Shot
- Work Conveyance Method: Monorail System (By Others)

Machine Parameters

- System Name: M12-108x90
- System Cleaning Envelope: 108in wide x 90in tall
- System Pass Height: **TBD¹**
- Line Speed Capability: 2.0 to 8.0 fpm
- Cabinet Material & Thickness: 3/8in Manganese Steel
- Entrance Vestibule Length: 24ft with Three (3) sets of Seals
- Exit Vestibule Length: 24ft with Three (3) sets of Seals
- Blow-off Enclosure: 30ft Blow-off Enclosure on Exit End
- Cabinet Liner Package: Premium Cast Hanging Liners
- Blast Wheel Qty, Size & Style: Twelve (12) M5 TwistLOK
- Wheel HP & RPM: 20HP at 1800 RPM
- Blade Style: Tool Steel
- Lower Reclaim Style: Vibratory Reclaim
- Separation System: Airwash
- Separation System Location: Floor Mounted
- Abrasive Feed Valves: MAC Valves
- CFM Requirement: 30,000 CFM

¹ Pass height dependent upon allowable pit depth, final work envelope, and reclaim style

Cabinet & Controls

- Power Requirements: 480V / 3Ph / 60Hz
- Controls Voltage: 24 VDC
- Control Panel: NEMA 12
- PLC Controller: Allen Bradley Compact Logix
- HMI Screen Size: Allen Bradley, 12in Screen – Panel View
- HMI Screen Location: Control Panel
- Additional Control Station(s): None
- Control Cabinet Cooling: No
- Hopper Level Sensor: Laser Level
- Pre-Wiring: EMT and Cable Tray

Collector Specification (Collector Optioned)

- CFM Requirement: 30,000 CFM
- Collector Size: CM036
- Air to Cloth Ratio: 2.08 to 1
- Total Filtration Media Area: 14,400ft²
- Fan HP: 100HP
- Static Pressure: 15.0in w.g.
- Dust Explosivity (KST): Not Tested
- Collector Location: Outside
- Collector Discharge: Outside

Special Parameters

- Spare Parts Discount: 5% Spare Parts discount for replacement parts.

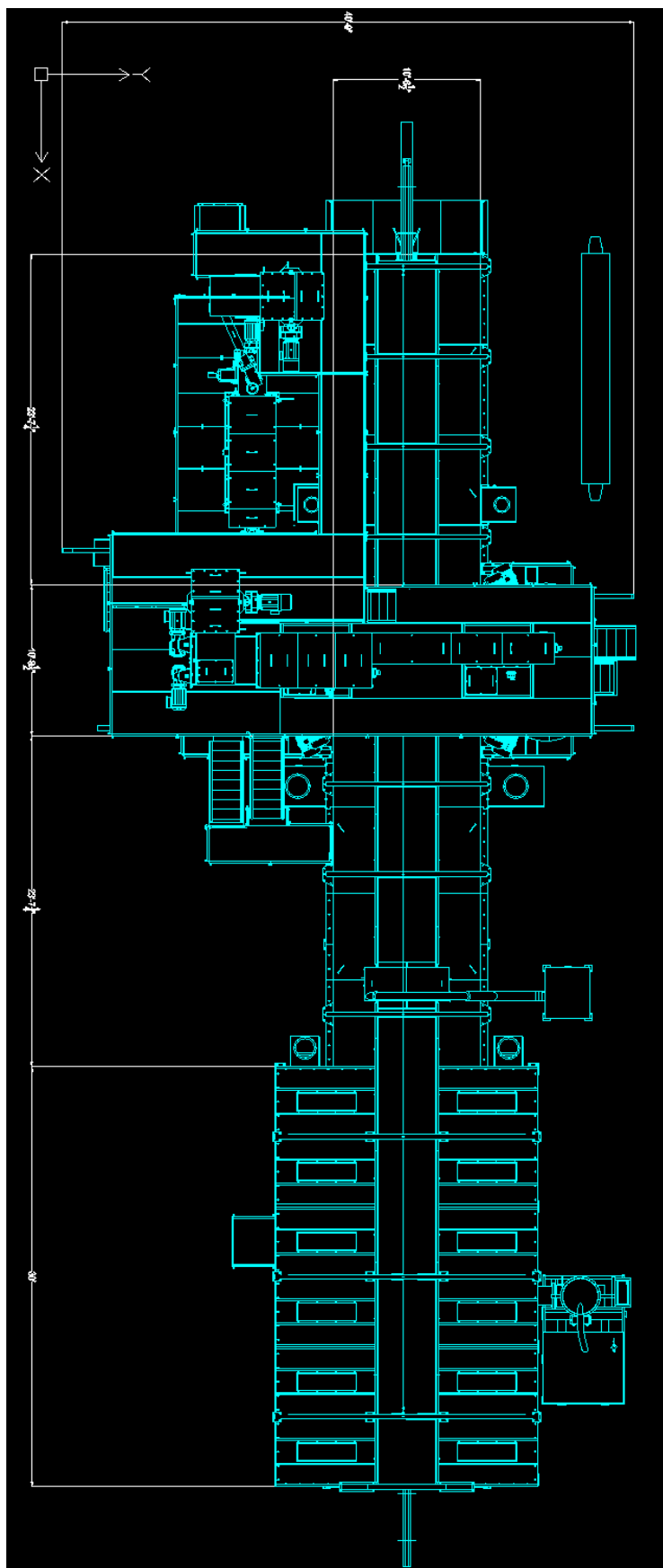


Figure 1: Preliminary system layout: 90ft Long x 41ft Wide

System Summary

The BCT M12-108x90 is a Pass-Through Blast system designed for cleaning frames and fabrications conveyed through the blast system via an overhead monorail system (by others). The proposed system is a pass-through design capable of cleaning at conveyor speeds up to 8.0 feet per minute.

As the part passes through the blast area Twelve (12) M5 TwistLOK wheels will blast the parts. This design will give full coverage of a wide range of parts for maximum cleaning. The abrasive feed to the wheels is controlled with MAC Valves.

All abrasive, metallic fines, and other waste are collected by a Vibratory Reclaim system. Reclaim chutes throughout the length of the system funnel material into heavy-duty augers which convey all material to the front of the blast system. These augers are fabricated from high-strength DOM tube and heavy-duty abrasion-resistant flanging. From chutes at the end of the machine, material is conveyed up into a pair of bucket elevators and up to the Airwash Separation System.

The separator uses an automated full curtain sensing system and pneumatic actuators to control the abrasive curtain across the airwash. This unique and innovative design ensures that the airwash gate stays shut until there is enough media built up for a full curtain. Additionally, there is a secondary high-level sensor that detects surges in the system. If this sensor is tripped the spill gate will open all the way to purge the system and prevent an overflow condition.

The separator then feeds a secondary elevator that feeds the cleaned abrasive to the storage hoppers. Flow controls built into the elevator head section and upper hopper design ensure abrasive is evenly distributed to both sides of the system and kept in balance.

Mechanical Design

Cabinet Design

- Structurally reinforced, 3/8" manganese steel cabinet with bolt together construction
- Blast wheels set on canted pods for optimal cleaning
- Cabinet walls lined with easy-maintenance 1/2" premium-cast chrome hanging liners
- Heavy duty manganese grated floor inside blast cabinet
- OSHA approved service platforms provide easy access to wheels and other regular maintenance areas
- Oversized plenum design offers maximum airflow with low velocity greatly reducing shot loss through the ventilation system & preventing premature ductwork wear



Figure 2: BCT Monorail Blast Cabinet

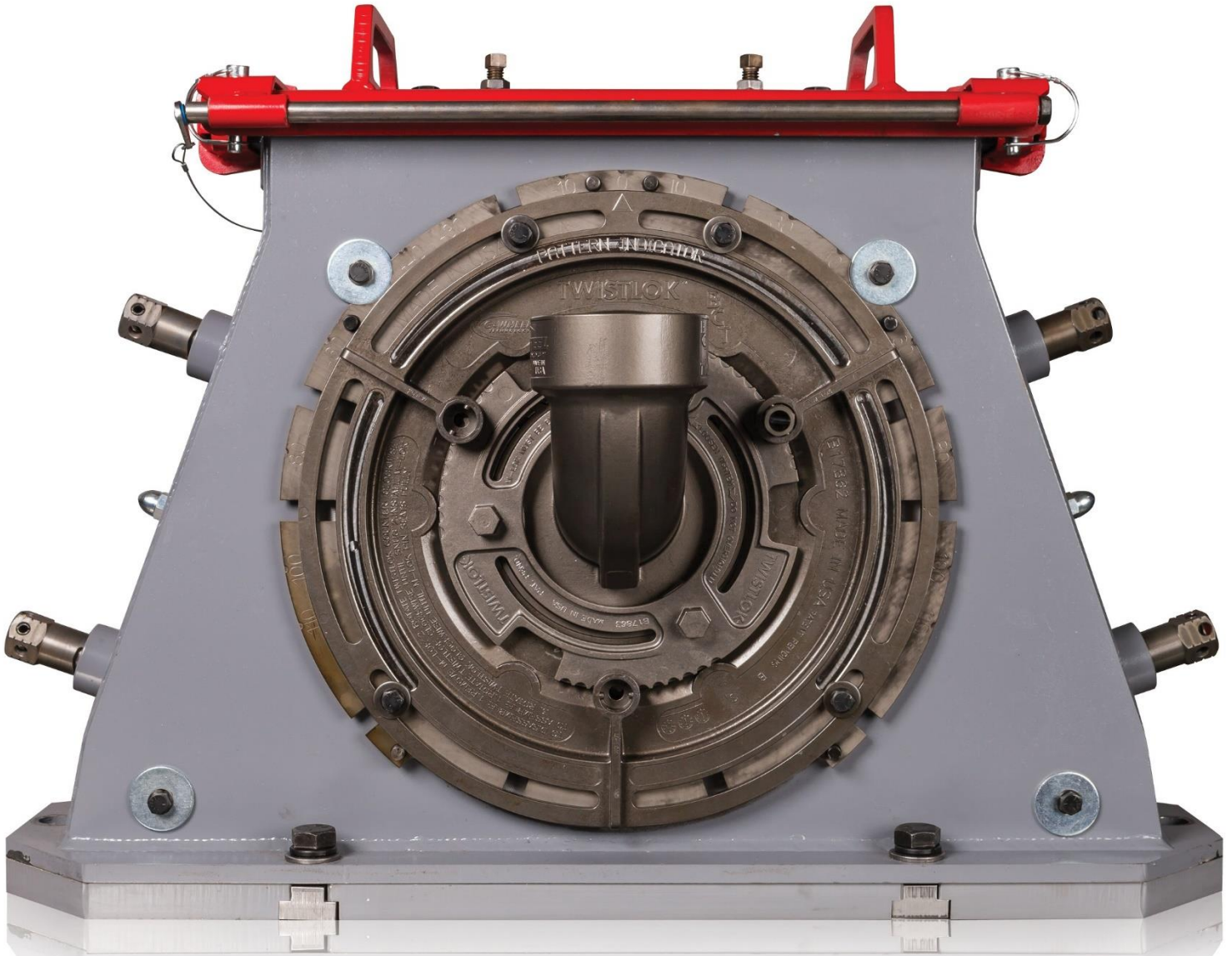
Cabinet Lining Package

- M-Cast premium cast hanging liners
- Liners placed in line with blast wheels to protect cabinet from direct blast
- Hooked hanger design allows for easy removal and relocation of liners
- Manganese hook fixtures
- Eliminates problems with high maintenance studs and cap nuts



Figure 3: Cast Hanging Liners

Welcome to the most advanced wheel technology in the shot blast industry.



BCT **TWISTLOK™**
e-WHEEL™ Technology

The Patent Pending **BCT TwistLOK™ e-Wheel™** design includes several major breakthroughs in shot blasting technology. All **TwistLOK** components are investment cast from a Super-Alloy Tool Steel providing unparalleled precision, toughness and wear life approaching 2-3 times that of traditional alloys used for blast parts.



The precision fit up of investment cast components provides a perfect seal, eliminating the typical seal issues of loose fitting plastic or rubber seals that mis-align during installation.



A simple twist with a wrench to the **TwistLOK** ring, allows for easy removal of the precision investment cast feed spout and easy access to the control cage and impeller.

THE ELIMINATION OF HARDWARE MEANS NO MORE THREADS.



Blast pattern is always set in the proper location by lining up the numbers on the control cage and cage adapter.



To remove the **TwistLOK**, simply rotate the clamp face just a few degrees to allow the clamp to disengage from the cage adapter.



The M-LOK is a threadless spring-loaded pin that locks the **TwistLOK** ring in place. A simple 90-degree turn locks the M-LOK into place, which in turn locks the **TwistLOK** assembly. All of this completed without a single thread.



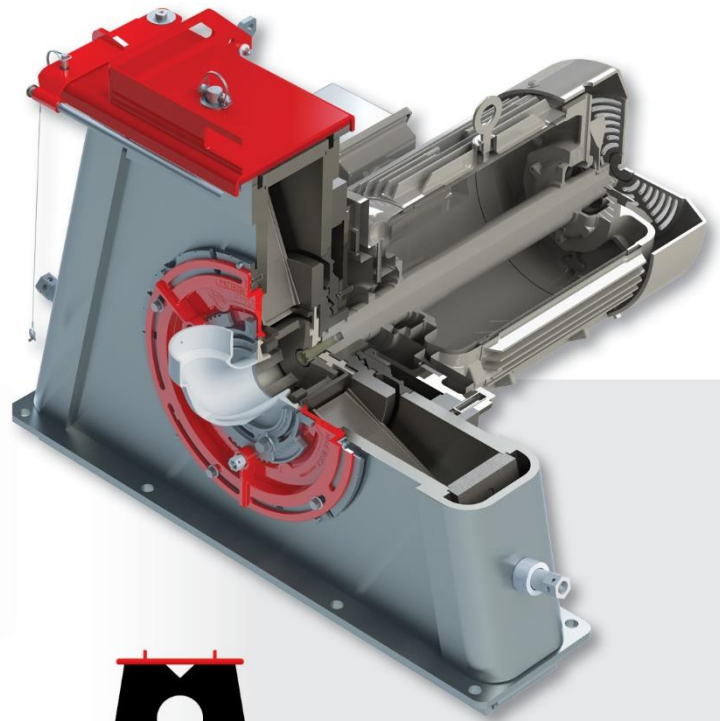
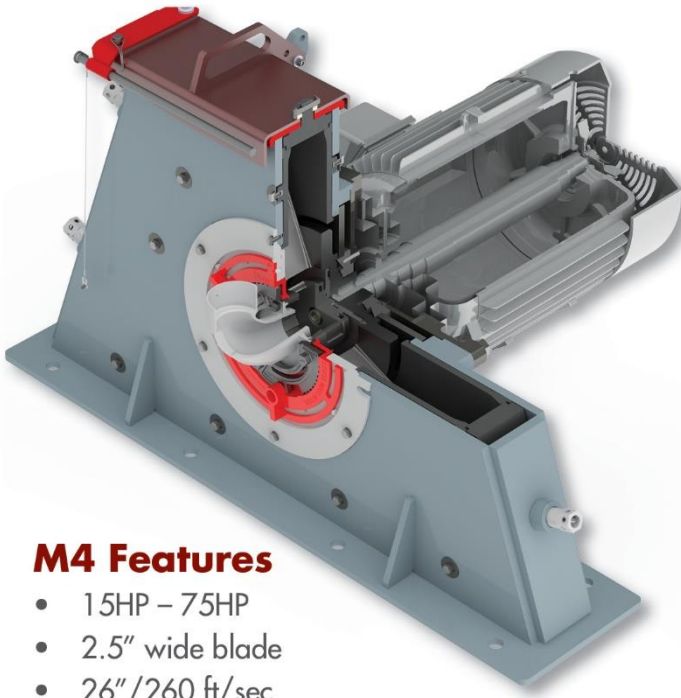
The **TwistLOK** ring is cast with "bubbles" which eliminates any potential interference from shot, dirt or fines during the clamping process. This allows the **TwistLOK** ring to work flawlessly, every time.



**TOMORROW'S
TECHNOLOGY
AVAILABLE
TODAY!**

M4

M5



M4 Features

- 15HP – 75HP
- 2.5" wide blade
- 26"/260 ft/sec
- 37, 49, 70 degree control cages
- Nominal wheel opening dimensions – 5"wide x 44" long



M5 Features

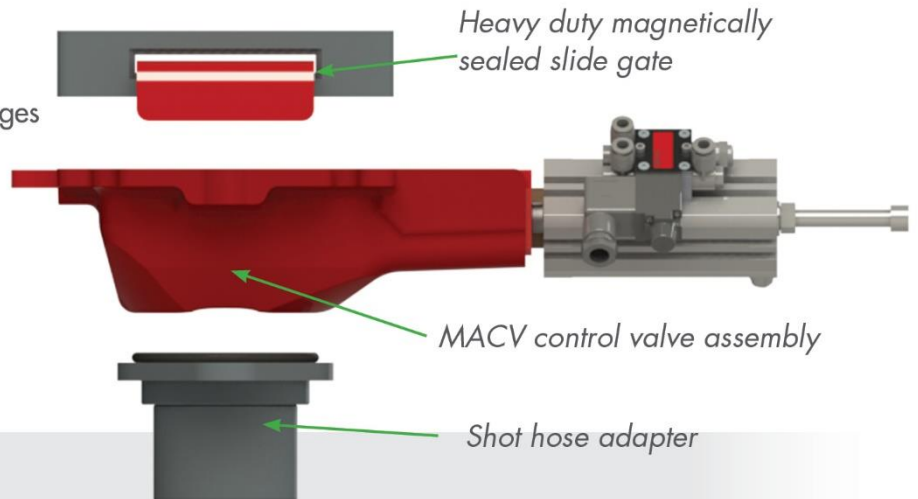
- 15HP – 125HP
- 3.5" wide blade
- 25"/250 ft/sec
- 37, 49, 70 and 100 degree control cages
- Nominal wheel opening dimensions – 6"wide x 40" long
- 100% Manganese housing
- Threadless end liner retention
- Standard and extreme duty options

MACV

Abrasive Control Valve

Heavy duty premium cast chrome abrasive valve - MACV

- Slide out cartridge assembly for ease of maintenance
- Cast alloy hardened body orifice
- Heavy duty magnetically sealed slide gate



MagnaValve Control Valves

- Controls shot flow with powerful rare earth magnets
- Allows enhanced flow rate control to blast wheels
- Designed to shut off abrasive completely when power is cut or interrupted for any reason
- Permanent magnets seal and hold abrasive media with magnetic field resulting in minimal wear and pro-longed service life and dependability
- No moving parts for low-maintenance operation

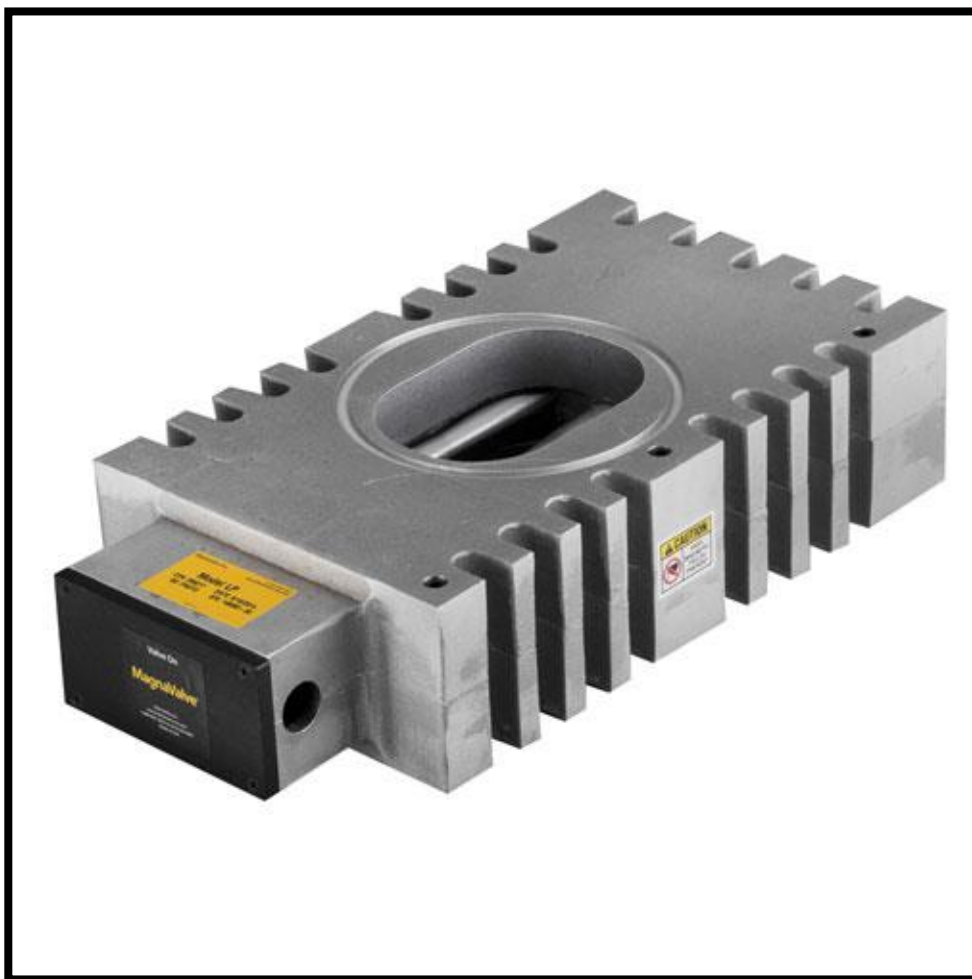


Figure 4: MagnaValve

Airwash Separation System

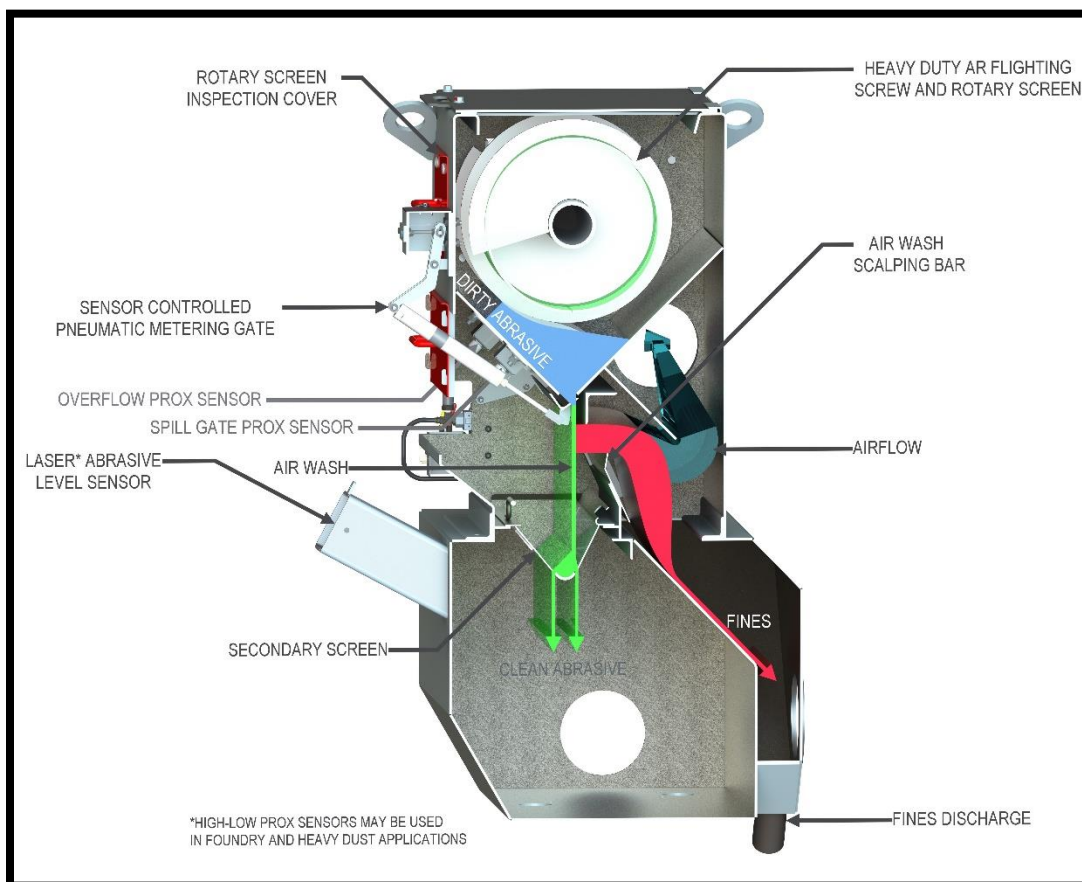


Figure 5: Airwash Separation System Diagram

- Automated full-curtain sensing system ensures a consistent curtain and equalized hopper storage
- Full curtain sensing system ensures that fines are effectively removed without losing good abrasive
- Abrasive catch pan in screen reduces wear and prevents abrasive from “bouncing” out of the air inlet
- Low profile design offers optimal headroom clearance
- Various access doors make the BCT airwash separator easy to inspect and service
- Covers are secured via OSHA compliant and easy to use cam-locks
- Laser level sensor in the abrasive storage hopper provides continuous real-time feedback on shot levels

Elevator Reclaim

- BCT designed single elevator assembly with integral exhaust plenum
- Full AR steel body construction provides superior wear and abrasion resistance

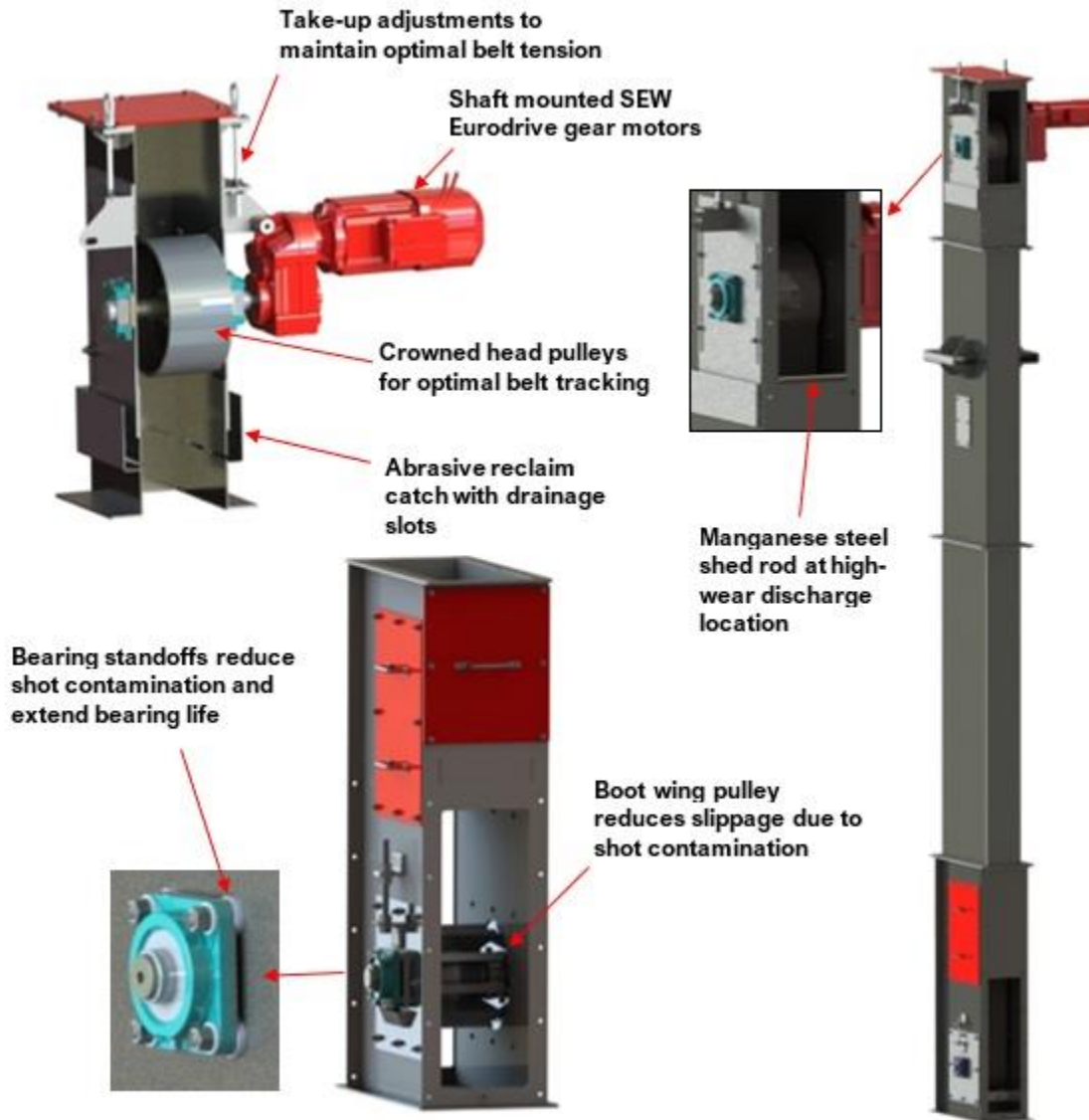


Figure 6: BCT Bucket Elevator Design

2,500lb Abrasive Adder

- 2500lb single point addition system
- Safe, clean and efficient way to unload shot from 55-gallon drums
- BCT Forklift attachment with manual chain drive or powered gear box
- Allows for 100% shot removal and reuse of a 55-gallon drum
- Level sensors detect fill level of the shot hopper and notify when full or empty

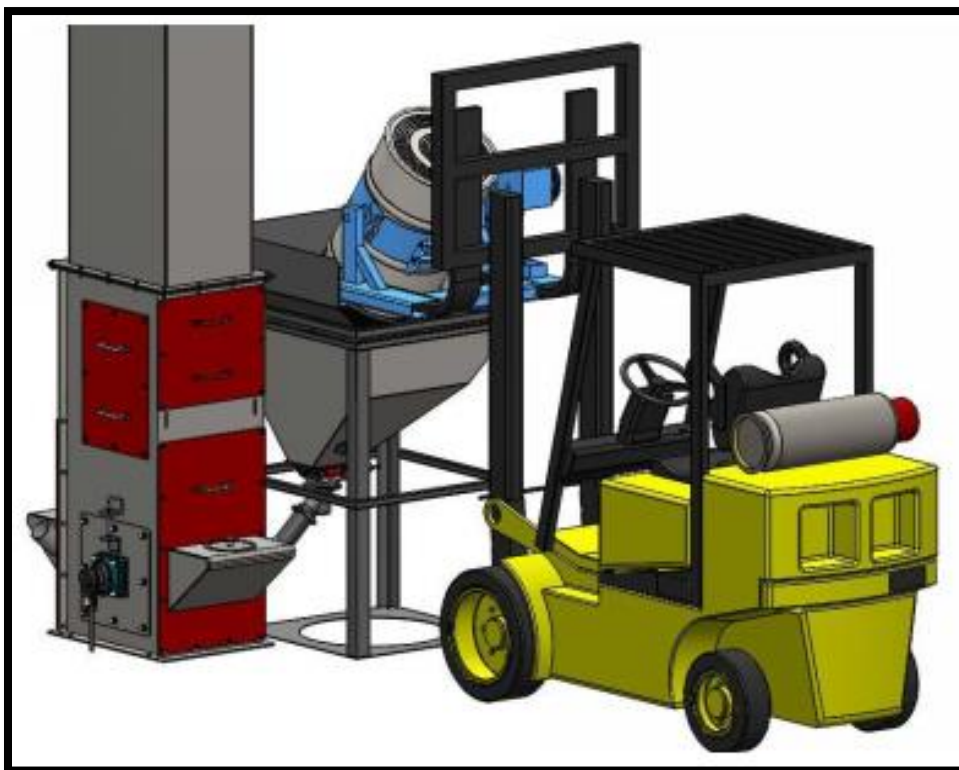


Figure 7: Shot adder and Safe-Tilt System

Electrical Controls

- 480V / 3Ph / 60Hz electrical system, 24 VDC control voltage
- NEMA 12 control panel with Premium IEC starters & components
 - Touch safe components
 - Blast wheel amperages are displayed through the HMI (not analog)
 - Panel includes E-stop, control power “ON”, and control power “OFF”
 - Touch safe fuses or breakers for short circuit protection on motors and controls
 - OSHA Compliant Arc Flash Safety Labeling
 - Web port access for remote support
- Allen Bradley Compact Logix PLC
- Two (2) 12” HMI touch screens
- Full System Monitoring includes:
 - All Blastwheel amperage
 - Blastwheel wheel hours
 - Manual operation for motors and individual shot valves
- Fault history for troubleshooting

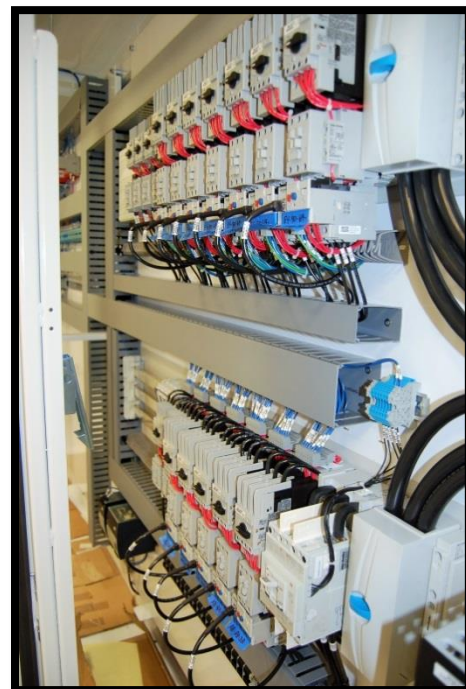


Figure 8: Electrical Panel and Wiring

Component	Qty	HP	Type	FLA Ea
Blastwheel	12	20	FVNR	28.4
Collector Fan	1	100	Soft Start	130.5
Elevator Belt Drive	2	7.5	FVNR	11.6
Monorail Blow-off	1	10	FVNR	14.7
Lower Reclaim Shaker	1	15	FVNR	22.1
Rotary Screen	1	10	FVNR	14.7
Rotary Valve	1	1	FVNR	2.2
Upper Distribution Screw 1	1	5	FVNR	8.0
Upper Distribution Screw 2	1	10	FVNR	14.7
TOTAL FLA				571.3

Table 1: Motor List

Key:

FVNR Full Voltage Non Reversing
 FVR Full Voltage Reversing
 VFD Variable Frequency Drive

Dust Collector

Make: Imperial Systems

Equipment Type: CMAXX

Model: CM036

Total CFM: 30,000

Total Filtration Media Area: 14,400 ft²

Air to Media Ratio: 2.08:1

Imperial Systems CMAXX™

The CMAXX™ was designed to be the strongest, safest, and most efficient dust and fume collector in the industry. It offers unique features found in no other dust collector. With powerful **DeltaMAXX™ PRIME** filters, the CMAXX™ features improved filter life, better pulse cleaning, and higher efficiency.



Filter Pulse Cleaning System

- High-efficiency **manifold-mounted pulse valves**
- Factory assembled and tested
- NEMA 4 solenoid enclosure
- Factory-mounted **pressure gauge on compressed air manifold**

Housing

- The only modular dust collector with **no external bolt holes**
- No leaks, backed up by our **Lifetime Warranty**
- **CrownTech domed roof** improves weather resistance and prevents rusting
- Stainless steel external hardware
- 7ga. and 10ga. construction
- Industrial-grade textured **powder coat**
- Meets 3,000-hour salt spray test based on ASTM B117-97 on standardized test panels
- 60° sloping hopper with standard 10" square flange discharge (Other sizes available)

Filter Access

- **Military grade door latches** for durability
- Tool-free single-handed operation
- Lockable door handle
- Tool-free filter change out with **Even Lock™ technology**

CMAXX Safety Pentagon

The CMAXX is outfitted with the most innovative features including a redundant safety design.

The features include:

- **Anti-Ramp Lift Rails** - Stops filters from overlapping each other
- **Double Gasketed Filters** - Double layer of protection to ensure a good seal
- **Completely Grounded** - Filters are grounded to the dust collector
- **Lift Rail Door Stop** - Stops the door from closing if the lift rails are not in the proper upright position
- **Sure-Stop System** - Ensures filters are installed properly or the door will not close, using pan indexing channel and door indexing bar



Structure

- **Powder coated** to match filter housing
- Seismic zone 3 construction based on 100 MPH wind load
- Bolted construction
- 54" Clearance for 55ga. drum and drum cover kit (Additional height optional)

DeltaMAXX PRIME 400 sq. ft Nanofiber Fire Retardant (Quantity 36)

- Nanofiber technology with a MERV 15 rating based on ASHRAE 52.2 testing, efficient down to 0.3 microns particle size
- Double gaskets to prevent any leaks
- SURE-STOP system interlocks with filter pan, preventing door from closing unless filters are correctly installed
- Unique grounding tab to prevent static buildup
- Oval shape to maximize rectangular pan space
- Fire retardant coating for spark and flame resistance
- Rated to 180 degrees F.

High Entry Inlet Staggered Angle Inlet Baffle

- High Entry Inlet allows the material to come in at filter level causing a natural downflow cleaning effect
- The inlet section is protected by our unique streamline Staggered Angle Baffles. These Baffles provide protection to the filters from abrasive material with minimum pressure loss
- Baffles bolt in and can easily be replaced
- Standard bolt on inspection door on inlet chamber

Abrasion Resistant Inlet

- This inlet works with the standard High Entry Inlet and Baffles
- 90-degree air inlet to slow down air and knock the heavies out of the airstream
- Material beds into internal grate to help stop abrasion
- Specify inlet diameter upon order

Sprinkler System

- Glass Bulb style sprinkler head(s)
- Collector is plumbed at factory and shipped with sprinkler heads

Large Pyramid Hopper

- This option minimizes discharge points
- Refer to drawings for detail

Drum Cover Kit(s) - 10" (254 mm) Dia with Manual Slide Gate

- Kit includes manually operated slide gate(s) with a 55ga. clamping drum lid and a flexible hose connector

Collection Drum(s) - 55-Gallon (208 litres)

Dwyer DCT1022 Control

- This control manages the Pulse Filter Cleaning System
- Software menu that is easily accessible and is designed so that you do not need an instruction manual
- There are no cumbersome menu keystrokes or passwords required to access the DCT1022
- High/low limit control capability from an external source such as the Dwyer Photohelic® Switch/Gage
- Solenoid time/on-time/off settings
- A universal power supply to meet domestic and overseas requirements
- Auto/manual control capability so you always have control over the system
- Downtime cleaning feature that allows for time based pulsing at the end of a plant shift or for completing a batch process
- Easily select the number of output channels

CMAXX Fan

Model: MS-360-HD-90-100 Fan

Total CFM: 30,000

Total Static Pressure: 12.0 inches W.G.

MS-360-HD-90-100 Fan

- 100 HP 230/460/3/60 Premium E motor
- Top-mounted heavy-duty construction
- Backward-inclined fan wheel
- Optional side mounted fan to reduce overall height available with additional cost by request

Opposed Blade Damper

- Blades move simultaneously in opposite directions to provide superior metering and control with minimal disturbance of the air pattern

Dust Level Sensor 1 Drum

The Dust Level Sensor from Imperial Systems makes it safe and convenient to monitor dust collection containers. The sensor uses a signal to detect the level of dust inside the container. When it detects that a container is full, a light on the sensor indicates which container needs to be changed out.



- 2 Indicator Lights for Sensors
- 2 Sensor Inputs
- Armed/Reset Button
- 9' 110V Power Cable
- Ultrasonic diffuse sensor (1)
- Detects material within 4-6" of the sensor
- 33' Sensor Cable (1)

Platform and Ladder

- Filter access platform runs the entire length of the collector on the filter access side
- Platform and Ladders over 6 feet tall include a Fall Restraint System. Cages can be optioned upon request
- Designed for easy, efficient, and safe filter change outs
- Handrails and anti skid grate for walking platform
- Complies to OSHA standards

Exhaust Duct Particulate Sensor

- Continuously monitors the clean air stream for dust particles

Compressed Air Regulator

- The CMAXX comes standard with a pressure gauge
- This is a recommended option for regulating the recommended 80 to 90 PSI of compressed air pressure
- Includes air filter

Solenoid Heaters

- 120V heaters internally mounted. This heater prevents solenoids from failure during freezing conditions. Remote thermostat included

Deflagration Items

10-Inch NFPA Compliant Airlock

- Cast Iron construction
- Full-pocket rotor with relieved tips and sides
- Outboard-mounted, permanently-lubricated bearings
- Abrasion-resistant, split-ring packing
- Self-adjusting packing glands
- Square inlet / round outlet throat (can build reversed for round inlet & square outlet)
- Over-sized flange with square or round drillings
- Custom flange drillings (could require adapter plate, call factory)
- Chain drive with OSHA guard, choice of speed
- Motors and Drives - 3/60/230-460V, TEFC Gear-motor, with HD mounting bracket

Explosion Vent (Quantity 2)

- Rupture style membrane vents
- Stainless steel
- All vents are sized based on material being classed at a ST1 with a 200 KST or lower value
- Includes Burst Indicator used to activate alarms, bells, and remote annunciators or interfaced with process control systems

EIV-VF32 Bundle (Explosion Isolation Valve)

EIV-VF32 Bundle

The installation of an explosion isolation device on all suction side ducts that transport material with a KST value above zero is an NFPA requirement. Installing an explosion isolation valve may protect your workers and facility from the damaging effects of a baghouse or filter explosion.

- Heavy-duty welded steel construction
- Flanged inlet and outlet with co-flanges
- Inspection access door
- Grounding lug
- Locking mechanism
- ATEX Certified
- Control Panel with NEMA 4 Enclosure
- Dust Level Sensor
- Microswitch for No Return Valve



Dust Collector Options

Fan Silencer

- Fan Silencer bolts directly to fan outlet
- Includes a support bracket
- Reduces noise to below 85DB or lower at 5'

BCT Operation and Maintenance Training

After purchase and upon installation of your equipment, Blast Cleaning Technologies (BCT) provides in-plant O&M and safety practices training for your maintenance/production personnel. Our training includes hands-on training conducted right at your blast machine by a member of our service staff. The installation of all equipment should be completed prior to beginning training so that our staff may conduct their hands-on training. Training costs include travel and per diem for BCT personnel.

Startup training includes:

- Blast wheel disassembly, assembly, and component identification
- Adjusting blast pattern
- Adjusting abrasive amperage
- Reading wear patterns
- Separator functions and settings
- Abrasive additions and sieve analysis
- Safety and recommended housekeeping practices
- Operator station and HMI controls
- Loading and unloading

Depending on machine type and style, additional training may be presented.

We work with your team to organize the dates and times to cover each shift of operation and maintenance.



Auxiliary Classroom Training

If the option is purchased, BCT provides an additional on-site classroom training session. This training is most beneficial if completed after the first month of full production use. Scheduling is subject to availability of training technicians. The course is customized to your production and maintenance practices. Prior to the session, BCT personnel spend a day reviewing normal production conditions, taking pictures and videos of the machine, and discussing general maintenance condition. This information is added to a comprehensive presentation which is reviewed together and is provided on a thumb drive. It is recommended that maintenance and production personnel attend this session all together. It is extremely beneficial to have everyone hear the same information and participate in the open discussions.

Classroom training includes the following:

- Understanding your blast process
- The five (5) main components of your blast cleaning equipment
- The basic safety requirements and safety controls for your blast equipment
- Understanding your blast wheels
 - Components and wear
 - Inspecting worn parts
 - Identifying normal wear patterns
 - Abnormal wear patterns and what to look for
 - Excessive wear patterns and what to look for
 - Blast pattern
 - What makes up a blast pattern
 - Setting your blast patterns properly
 - Wheel efficiency
 - Importance of wheel amperage
 - Flooded wheel causes
 - Starved wheel causes
- Understanding your work handling system
- Maintaining and setting your abrasive handling system
 - Elevator
 - Separator

Keys to controlling the abrasive operating mix

Safety

BCT is committed to keeping operator safety our first priority in blast cleaning equipment design. BCT equipment is designed and manufactured to meet North American industrial specifications, such as, OSHA and UL (certifications available at additional cost). Equipment designs have commonly included safety items and controls, including, but not limited to, the following:

- Cautionary/warning signage
- Lifting lugs
- Proper isolation points
- Safety interlocked or totally enclosed guards (if applicable)
- Emergency stops
- Safety alarms (when required or upon customer request)
- Pinout and bracing location (if applicable)
- Fall protection (in the form of railings and swing gates)

BCT trained technician for equipment start-up, safety training, and commissioning are available for supervision and/or installation depending on options(s) purchased. The customer is to provide qualified operators and/or trainees. We recommend that these operators have proper safety training in the areas of, but not limited to, the following:

- Energy Control/Lockout-Tagout
- Confined Space
- Hoist/Crane Safe Use
- Rigging and Inspection
- Walking Working Surfaces – Fall Protection
- Electrical Safety Awareness

Hot Work

Project Parameters:

Installation Information

Start-up & on-site training is by: **BCT**

The following are optional purchases:

Offloading and equipment set down is by: Customer (unless option purchased)

Erection supervision is by: Customer (unless option purchased)

Mechanical installation is by: Customer (unless option purchased)

Electrical installation is by: Customer (unless option purchased)

The following is requested at time of order:

Blast machine location,

Dust collector location,

Control panel location,

Building access limitations,

Largest access door,

Building modifications/wall penetrations,

Site obstructions, such as, sprinkler system, utility lines, ductwork, etc.,

Building Layout/Drawing, **if available**.

Application Qualifications

This proposal is based on application information described in the appropriate section(s).

Parts must be dry and free of all oil and grease.

The proposed equipment is designed for use with the abrasive defined in the applications scope.

Surface finish and profile will vary with blast media selection and condition, as well as production rate.

Ventilation (dust collector and ductwork) design is based on:

- Correct fan CFM and cartridge air-to-cloth ratio for the proposed application, base machine, and all purchased or customer supplied options.
- Fan static pressure (inch w.g.) includes resistance from air inlets, outlet plenums, ductwork, initial filter resistance, plus allowance for use.
- Ducting run is based on the dust collector being located within 30 ft of the blast machine with up to six (6) elbows/transitions.
- Air velocity within the ductwork must be between 3,500 and 4,500 LFPM.
- If ducting runs longer than 30 ft, additional elbows and restrictions, after filters, fan silencers, exhaust stacks, and poor plenum design will increase the static pressure which may require a larger fan and/or more powerful fan motor.

Manuals

One (1) hard copy of operating and maintenance manual and a PDF copy.

Manuals include training information, warranty information, spare parts list, general maintenance guidelines, GA (General Arrangement drawing), assembly drawings and electrical schematics, plus vendor manuals **(if applicable)**.

Paint

Blast machine and dust collector: BCT Machine Gray and Red

All handrailing, ladders, and safety guards: "Safety Yellow"

Machine Assembly and Acceptance

Equipment is available for in-person inspection at the facility at any point of assembly and testing with prior written notice. Notice must be received by BCT at least two business days in advance.

All key components are pre-assembled and dry fitted prior to shipping.

Sensors, zero speed switches, and safety devices are installed.

Wet Run is a complete operational testing **with** customer supplied parts and abrasive blasting.

Dry Run is a complete mechanical and electrical testing **without** parts and abrasive blasting.



Purchaser to Furnish

Site Preparation

All required embedded or floor mounted steel to support and/or secure the proposed equipment at the required height above finished floor level (embedded steel provided for all vibratory components ***unless agreed upon in writing***)

All foundation work (pits and troughs), pit steel (curb angles), sump pumps, concrete protection/waterproofing, appropriate access to pit, pit grating, grating covers, deck plate, guard rails, hand railing, and ladders

Civil engineering for BCT supplied finished dimensions layouts and loadings, ***as required***

Building to provide weather protection from all forms of precipitation, wind, and other applicable weather conditions

All building and facility alterations including roof/wall penetrations and sealing

All lighting and temperature control for machine area, ***as required***

All required licenses and permits to construct and operate the proposed equipment

All warning lights, horns, or other personnel safety equipment deemed necessary to meet customer requirements (***unless otherwise agreed upon in writing***)

Installation and Start-Up

Temporary facilities provided for installation and start-up personnel including the following utilities:

- 460 VAC power supply for welder/plasma cutter (***if applicable***)
- 110 VAC power supply
- Clean dry air with a minimum of 80 psi

Suitable scrap bins provided for collecting and disposal of refuse and debris.

Dry storage of equipment in a set-down area near the final equipment location with clear and free access.

All field painting of customer supplied material.

Touch-up painting of BCT supplied equipment required after completion of installation. This may include paint damage from shipping, loading, and unloading as well as erection.

If not purchased, the following is also the responsibility of the customer:

Receiving, off-loading, staging, sorting, and inspection of equipment; including material handling (crane/forklift), tools, and labor.

With written permission, the purchased parts may be stored in a location exposed to the elements but are ***required*** to be tarped with heavy duty water-proof tarps which are approved by BCT and are secured so as to protect all the components.

Installation labor, material handling, and tools to erect, field weld, and assemble the proposed equipment. The use of a plant overhead crane and forklift as well as welding equipment may also be required as part of the installation scope of supply.

Installation supervision and field commissioning of equipment at the job site.

Plant Utilities (Electrical)

460VAC/3-Phase/60 Hertz power supply needed to meet requirements outlined in the proposal.
Final amperage requirement to be determined during engineering phase.

Design, supply, and connection of 3-phase electrical power feed from the customer power source to the disconnecting application supplied by BCT.

Design, supply, and connection of power and control wiring from the control panel to individual motors, dust collector, remote panels, and external devices **(unless pre-wiring is part of the scope of supply)**.

Control panel to be within 10 ft of BCT machine cabinet

Reconnection of control panel wiring harnesses to equipment mounted junction boxes, motors, and external devices **(unless option purchased)**.

Plant Utilities (Pneumatic)

Clean, dry, and oil-free compressed air from plant source to blast equipment and dust collector connection point(s) needed to meet requirements outlined in the proposal. **Final specifications to be determined at time of order.**

Compressed air dryer, filters, regulator with gauge, water trap, and lockable shut-off valve.

- Minimum pressure of 80 PSI.
- Maximum pressure of 110 PSI.

No lubricator to be installed in airline.

Pneumatic piping from compressor to dust collector and blast equipment to be installed.

Pneumatic piping and tubing from equipment and dust collector connection point(s) to pneumatic devices **(unless option purchased)**.

Ventilation and Fire Suppression

Dust collector to provide ventilation to base machine and options as outlined in the proposal. Machine CFM requirements as outlined in the applications scope with a minimum 9 inch w.g. static pressure. Additional accessories such as deflagration systems and distances beyond 30 ft may require additional static pressure.

Machine, dust collector, and ductwork upgrades as well as grounding of dust collector and ductwork per NFPA-484 requirements as applicable.

All fire suppression requirements set out by the customer's insurance underwriter, fire marshal, local codes, and regulations such as OSHA and NFPA whether ventilation equipment is supplied by BCT or by others. **Customer is responsible to advise at time of order.**

Dust collector, if provided by BCT, may require sprinkler connection per manufacture's specifications.

Design and supply of roof and building duct supports/hangers, **as required**.

Weather protection for the dust collector fan, exhaust, and motor **(if applicable)**.

Service platform and ladder **(unless option purchased)**.

After filters and transition with magnehelic gauge **(if applicable and unless option purchased)**.

Design and supply of ventilation ductwork, including blast gates, from all take-off points to the dust collector inlet **(unless option purchased)**.

Design and supply of abrasive trap (cyclone) including supports **(if applicable)**

Material Handling (if applicable)

All external conveyors, external spill hoppers, and external material handling equipment, such as overhead crane, monorail system, load beams, work hooks, and attachments.

Design and supply of work fixture(s) which allows passage through the blast equipment, prevents product from being dislodged by the blast process, and allows abrasive to return into the reclaim system.

Operational Requirements

Items not specifically outlined in this proposal but included in amending documents.

Free flow and removal of dust collector discharge and airwash separator refuse.

All suitable trash receptacles and disposal of refuse and debris.

Blast media for initial charging of the system, start-up, and operation.

All means of removing abrasive from the work after blasting.

All sample parts for testing and commissioning of the equipment, **as required**.

Sound/noise attenuation and/or abatement, perimeter guarding, and fencing **(unless option purchased)**.

BCT Installation Pricing

BCT reserves the right to amend the installation price based on changes to the scope of supply or job site conditions following a project meeting or site visit.

All labor is based on a non-union work crew.

Estimate is based on the purchase of the base machine and options outlined on the pricing summary page.

BCT Freight Policy

Coordinating with a carrier or freight service hired by the customer will incur a charge of \$3,500 to cover administrative, packaging, and/or handling costs. Alternatively, BCT can provide a quote for full freight services upon request.

Because of fluctuations in shipping rates any quoted freight is budgetary unless otherwise specified. Pricing for freight will remain subject to change up two weeks prior to shipment. Final and firm pricing will be provided within 2 weeks of the actual shipment day.

BCT Cancellation Policy

If an order must be cancelled for any reason by the customer, notice of cancellation must be provided in writing to Blast Cleaning Technologies (BCT). In the event of cancellation after issuing a Purchase Order, the customer is responsible to pay BCT a portion of the Purchase Order price to cover costs incurred by BCT at the time of cancellation, plus 10%.

If the order has progressive billing payment terms, all monies, including but not limited to the down payment, paid prior to the written notice of cancellation are forfeited and the customer may be subject to additional charges at the time of cancellation. Additional charges will be determined by subtracting payments made by the customer from the total costs incurred by BCT at the time of cancellation, plus 10%. Additional charges are due upon receipt of an invoice from BCT.

Pricing Summary²

BCT M12-108x90 Pass-Through Blast System.....\$2,451,500.00

- Machine Assembly at BCT and Pre-Wiring in EMT and Cable Tray
- 108" Wide x 90" Tall Cleaning Envelope
- 3/8" Manganese Steel Blast Cabinet
- Twelve (12) M5 TwistLOK blast wheels with 20HP Premium Efficient Motors and VFDs
- MagnaValve Abrasive Flow Control
- Wheel Maintenance Rails built into upper platform structure
- Premium Cast Hanging Liners
- Floor Mounted Airwash Separation System with stairway access
- Heavy Duty Vibratory Reclaim System
- Foundry Duty Elevator with 2,500-lb abrasive addition system
- Safe-Tilt Barrel Tipper System
- NEMA 12 Enclosure with Allen Bradley Components - 480V, 3Ph, 60Hz
- Allen Bradley Compact Logix PLC
- Allen Bradley 12in PanelView Color Touchscreen HMI, 24 VDC
- Remote Operator Station
 - An operator station separate from the main electrical enclosure
 - Includes junction box, bracketing, conduit, and wire
 - Assumes relocation of the HMI from the electrical enclosure to this station
- BCT Remote Ethernet Access for System Troubleshooting
- HMI Information Package
- System Start-Up, Commissioning & Training



Figure 9: Previous BCT 12-Wheel Blast Machine

² **Market Volatility:**

The steel market is seeing a sharp increase in demand and as a result, steel prices have risen dramatically. Additionally, purchased finished goods such as gearmotors and electrical components have been on the rise. Pricing in this proposal is valid for 30 days.

Service Options

- S.1 BCT Mechanical & Electrical Installation (Budgetary)³ \$268,000.00**
- Budgetary pending finalized scope of supply
 - BCT installation package includes the following:
 - o Travel & Per-diem
 - o Rental equipment
 - o Offloading and receiving
 - o Equipment erection and mechanical assembly
 - o Electrical field wiring (In EMT and Cable Tray)
 - o Pricing assumes a single mobilization for Mechanical Team and Electrical Teams. Additional mobilizations due to delays by others will incur additional fees.
 - Items not included:
 - o Foundation design and floor preparation by others
 - o Primary power to panel(s) by others
 - o Compressed air supply by others
 - o Ductwork material and installation by others
 - o Installation of surrounding utilities (gas, water, etc.)
 - o Any and all building modifications
 - o Collector installation adder: **+\$10,700.00⁴**
- S.2 BCT Mechanical Installation Supervision \$2,150.00 per day**
- Pricing for a single BCT technician on-site up to 10 hours per day to supervise an install crew
 - Includes travel & per-diem
- S.3 BCT Electrical Installation Supervision..... \$2,150.00 per day**
- Pricing for a single BCT electrician on-site up to 10 hours per day to supervise an install crew
 - Includes travel & per-diem
- S.4 Extended Two (2) Year Warranty \$12,000.00**
- Warranty extension from one (1) year to two (2) year.
 - Includes Quarterly inspections and reports by BCT with recommended actions to maintain blaster

Note: Option S.1 does not require purchase of S.2 or S.3. S.2 and S.3 are presented solely for BCT supervision of an installation crew hired by the customer.

Controls Options

- C.1 UL Label for Control Panel..... \$1,600.00**
- BCT electricians are certified to UL Label our panels and can do so upon request

³ A firm proposal on installation services will require a complete work site evaluation by BCT personnel

⁴ Installation of collector and silencer. Does not include any ductwork.

Mechanical Options

M.1 Parts Blowoff Array⁵ \$64,800.00

- Blowoff fan will increase from 10HP to 40HP
- Air cannons will be arrayed around the work envelope on a pipe-and-clamp framework for manual positioning and targeting
- Increases dust collection CFM requirement by approx. 5,000CFM

Dust Collection Options

D.1 CMAXX CM036 Dust Collector \$230,420.00

- 30,000CFM Collector with 2.08:1 Air to Cloth
- 100HP Premium Efficiency Fan with Slide Gate Damper mounted to roof of collector unit
- 15.0 (w.g.) static pressure rating on fan
- Large Pyramid Hopper (Single 10" Discharge Outlet)
- High Entry Staggered Angle Inlet Baffle
- DeltaMAXX 400 ft² Nano Fire Retardant Filters
- Abrasion Resistant Inlet
- Sprinkler System
- Access Platform and Ladder
- Exhaust Particulate Sensor⁶
- Compressed Air Regulator
- Solenoid Heaters
- Drum Dust Level Sensor
- Explosion Vent
- Cast Rotary Airlock
- EIV-VF32 Explosion Isolation Valve
- NEMA 12 Control Enclosure, 24VDC Control Voltage

D.2 Fan Silencer with Support Bracket \$8,220.00

- Fan Silencer bolts directly to fan outlet
- Reduces noise to below 85DB or lower at 5'

D.3 Ductwork from Collector to Blast..... \$335,000.00

- Budgetary pricing.
- Assumes 100ft straight run between collector and blast equipment.
- Includes installation labor and equipment.
- Does not include building modifications such as wall penetrations or structural modifications to support ductwork.

⁵ Parts blowoff array has varying effectiveness on pockets, channels, etc.

⁶ **NOTE:** The exhaust particulate sensor requires addition length of exhaust ductwork.

Payment Terms⁷

All Payments to be made to:

BCT - Blast Cleaning Technologies
6682 W Greenfield Ave, Ste 103
West Allis, WI 53214

This proposal is contingent upon acceptance of BCT's Terms and Conditions.

All invoices due upon receipt

Progress payment schedule:

- 25% Down with Purchase Order, Net 10
- 25% Due upon submittal of General Arrangement and Foundation approval drawings, Net 10
- 40% Due prior to shipment
- 10% after start-up and acceptance, not exceeding sixty (60) from date of shipment

Shipment

- Based on our current engineering and production backlogs, shipment is 38-46 weeks from receipt of purchase order and down payment.
- Actual delivery schedule will be confirmed at time of order and will be based on the production and engineering backlogs at that time.

Warranty

The equipment is covered by our one (1) year BCT – Blast Cleaning Technologies warranty. Wear parts and purchased items (such as bearings, drives, and electrical components) are excluded from this warranty.

⁷ This proposal is based on BCT's standard Terms and Conditions

All Shipments are F.O.B. West Allis, freight collect unless freight option purchased
All applicable taxes are extra

All pricing in U.S. Funds

Prices are subject to confirmation at time of order placement

Revision Log

REV-0: [JMC]

- Initial Release

REV-A: [JMC]

- Pricing updated (Feb 2022 -> May 2022)
- Freight Policy modified to 0.25%

REV-B: [JMC]

- Rolled options into the Base Price
 - C.1, C.2, C.3, C.5, and M.1
- Updated collector pricing per latest notification from vendor
- Deleted option for Rhino Drum
- Rolled collector options into D.1
 - D.2, D.4, D.5, D.6, D.7, D.8, D.9, D.10
- Updated lead time (was 27-32 weeks, now 38-46 weeks)

REV-C: [CPM]

- Updated Base Price from \$2,593,600 to \$2,482,000.00
- Rolled Various Included Items into Base Price Summary:
 - VFD Drives for Blast Wheels
 - MagnaValve Controls
 - Vibraotry Reclaim System
 - Remote Operator Station
 - HMI Information Package
- Offered deduction if PR22-0099 System is Purchased in addition to this system [\$2,400,000]
- Revised Installation Price from \$300,000 to \$288,000
- Consolidated Collector Options into base and revised pricing:
 - From \$229,600 to \$205,450
 - Access Platform and Ladder
 - Exhaust Particulate Sensor
 - Compressed Air Regulator
 - Solenoid Heaters
 - Drum Level Sensor
 - Explosion Vent
 - Cast Rotary Airlock
 - EIV-VF32 Explosion Isolation Valve
- Updated PPI Index

REV-D: [CPM]

- Removed discount for purchase of two systems.
- Updated base price to be \$2,400,000 from \$2,482,000
- Reduced installation price to \$272,300 from 288,000
- Optioned Collector install under installaiton pricing

REV-E:**[CPM]**

- Updated pricing and lead time
- Removed steel tonnage section in appendix and ammended footnote on pricing summary
- Increased collector fan static pressure to 15 in w.g. from 12in w.g.
- Collector price revised to reflect increased static pressure.
- Included budgetary ductwork

REV-F:**[CPM]**

- Included spare parts discount in application scope.
- Included an option (S.4) for two (2) year warranty and service contract.

BCT Terms & Conditions

1. GENERAL: These Terms and Conditions of Sale are Seller's standard terms for all contracts for the sale of its Products and apply unless modified by other parts of the Contract. As used herein, the term Contract means Seller's Proposal, Quotation, Bid or Acknowledgement Terms and Conditions and all specifications and additional terms and conditions attached to or incorporated in any of such documents, directly or by reference and the terms "Product" or "Products" mean the equipment, machinery, services (if any), supplies, repair parts, drawings, data and other property in total or in part as the case may be, which are the subject of this Contract. This Contract does not include, unless otherwise expressly provided herein, the erection, installation, startup, testing, maintenance or other operation of any Product or the foundations or structures supporting or associated with any Product, all of which are the responsibility of the Buyer unless specifically stated otherwise by Seller.

2. OFFER AND ACCEPTANCE: The Contract, until accepted by Buyer, is only an offer to contract, which may be accepted by Buyer only on the exact terms hereof. Prices and other terms in any Bid, Proposal or Quotation are firm for 30 days. If a Contract is not agreed to within such period, Seller may adjust prices or other terms at any time prior to or upon confirmation of the order, if additional or different terms are proposed or requested by Buyer, such terms shall constitute a counter-offer and such terms are objected to unless Seller, at its option, specifically accepts any of such terms by written notice to Buyer. No such additional or different terms shall be deemed accepted by performance or acknowledgement of Buyer's purchase order or similar form document.

3. ENTIRE CONTRACT, MODIFICATIONS: This Contract constitutes the entire agreement between Seller and Buyer with respect to the Product, superseding any prior or contemporaneous representations, understandings or agreements, oral or written. Accordingly, Buyer expressly waives all provisions contained in correspondence, forms or other writings relating to the sale of the Product covered by this Contract which negate, limit, extend or conflict with the provisions hereof. In the event of any conflict among documents comprising the Contract, the later document shall control. No subsequent modifications to the contract shall be effective unless specifically agreed to in writing by Seller.

4. PRICES: Seller reserves the right to adjust prices after a contract is formed only in the event of any subsequent substituted increase in the cost of any materials included in the Product.

5. TAXES: The prices stated in this Contract do not include sales, use, value added, excise, ad valorem, property or other taxes, tariffs or duties (other than U.S. federal, state, or local taxes on Seller's net income) now or hereinafter imposed, directly or indirectly, by any governmental authority or agency with respect to the manufacture, production, sale, delivery, consumption or use of the Product covered by this Contract. Buyer shall pay such taxes directly or reimburse Seller upon demand for such taxes it may be required to pay.

6. TIME OF PAYMENT; REMEDIES FOR LATE PAYMENT: Payment is due net 30 days after shipment of the Product, unless otherwise specified in the contract. In addition to any other remedies for non-payment, if any payment is not made within 30 days after it becomes due, Buyer shall be liable for all costs of collection, including Seller's attorney's fees and expenses, and interest on all unpaid amounts due under the Contract accruing from the date due until paid in full at the lesser of (a) the maximum rate permitted by law or (b) 12% per annum compounded monthly. All payments shall be applied first to collection costs and other amounts due, then to accrued interest and last to payments of the price for the Product. Extension of any date for shipment, unless caused by Seller's fault, shall not excuse buyer from timely payment on the specified dates.

7. BUYER'S FINANCIAL RESPONSIBILITY: Seller's reasonable doubt as to the Buyer's financial responsibility, including the failure to make any payment when due under this contract, shall entitle Seller without liability to Buyer to suspend performance of or terminate this Contract, to require full or partial payment in advance or adequate security as a condition to performance, to decline shipment, to stop the Product in transit, or to defer further shipment, without any obligation to continue to perform until the Buyer shall have satisfied Seller of its continuing financial responsibility. Such action by Seller shall not affect Buyer's obligations hereunder. Any partial shipments shall be conclusively deemed to be separate contracts governed by the terms of this Contract.

8. SHIPMENT: TITLE: RISK OF LOSS: Unless otherwise specified, the Product shall be shipped f.o.b. Seller's designated shipping point. Title shall pass to and all risk of loss shall be assumed by Buyer on delivery to carrier, unless otherwise specified.

9. DATE OF SHIPMENT: The shipment schedule provided in this Contract is approximate and is based upon prompt receipt by Seller of all necessary information and data regarding the Product, timely receipt of all Buyer furnished material and prompt payment of all amounts due prior to shipment. Seller will use reasonable efforts to meet the stipulated shipment schedule; shipment within a reasonable time thereof shall constitute compliance with this Contract. Delivery hereunder shall be deemed made and complete upon shipment in accordance with the "Shipment Title: Risk of Loss" paragraph above.

10. DELAY DUE TO CIRCUMSTANCES BEYOND SELLER'S CONTROL: Seller shall be excused for delay in delivery and/or may suspend performance of this contract without liability to Buyer in the event and to the extent of "force majeure", including the occurrence or existence of: Acts of God, war, civil strife, mobilization, riot, strike, lockout, work stoppage or other labor difficulties, fire, extreme weather or other natural disaster, explosion, accident, delays of carriers, embargoes, the acts or orders of governments, inability to obtain suitable and sufficient labor or raw materials, governmental priorities, or any other abnormality, contingency or cause beyond the control of Seller which adversely affects its ability to make, provide or ship the Product.

11. LIMITED WARRANTY; EXCLUSION OF OTHER WARRANTIES: Seller warrants that the Product, when shipped, is free from defects in materials and workmanship. If any such defects exist or later appear, Seller shall undertake, at its sole expense, prompt remedial action as stated herein to correct the same, provided, however that Seller shall have no obligation or liability under this warranty unless it shall have received, within thirty (30) days after the defect is discovered and no later than one (1) year on repair and equipment orders after Date of Shipment, written notice specifying such defect and the circumstances under which it was discovered. Warranty will be valid only if Buyer purchases and utilizes Seller's replacement parts purchased directly from Seller. Remedial action under this warranty shall require only that Seller, at its option, repair or modify the product, replace the same f.o.b. Buyer's plant or authorize and accept the return of the Product by Buyer at Seller's expense and refund the purchase price. This warranty does not cover consumables included in any Product and does not cover any Product or part thereof manufactured by others except to the extent of the manufacturer's warranty to Seller which Seller is allowed to pass on. This warranty does not cover repairs or replacements required as a result of misuse, mishandling, improper storage, extreme weather or other Acts of God, use other than under normal operating conditions, failure to install, test, use maintain and repair the Product in accordance with Seller's instructions or other use inconsistent with Seller's instructions. The remedies specified in this paragraph constitute Seller's sole obligation and liability and Buyer's exclusive remedy under this warranty. THIS WARRANTY IS IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESS, IMPLIED OR STATUTORY, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

12. LAWS, CODES, REGULATIONS, SAFETY DEVICES: Compliance with local, state or federal laws, codes or regulations relating to the Product and its use is the sole responsibility of the Buyer;

Seller makes no warranty or representation with respect thereto. Seller shall be required to provide or install only such devices for the protection of safety and health as are specified in this Contract. Buyer assumes the responsibility for providing and installing any and all safety devices not required of Seller and agrees to indemnify and hold harmless the Seller against any expense, loss or damage which the Seller may incur or sustain as the result of Buyer's failure so to do.

13. PATENT INFRINGEMENT: Seller shall, at its own expense, assume the defense of any claim, suit or other proceeding brought against Buyer based upon a claim that the Product furnished under this Contract infringes any United States patent. Buyer shall give Seller prompt notice of any such claim made against or levied by Buyer and shall be liable for any loss or expense caused by any delay in notification. Buyer agrees to cooperate in the defense of any such proceeding and to provide information, assistance and authority necessary therefore. If the Product in such suit is held to infringe and the use of the Product is enjoined, or if Seller in settlement of any claim agrees to modify or discontinue use of any infringing feature, the Seller shall, at its own expense and at its option, procure for the Buyer the right to continue using, said Product, replace same with a substantially equal but non-infringing Product, modify it so it becomes non-infringing or refund the purchase price thereof, without further liability to Buyer. This paragraph shall not apply to and, Buyer shall not be liable for infringement by, any Product manufactured to Buyer's design or covered by patents issued after the date of the Contract.

14. LIMITATIONS OF SELLER'S LIABILITY: Except for the remedy described under Warranty above and except as otherwise required by law, Seller shall not be liable for any actual, direct, indirect, punitive, special incidental or consequential damages or losses Buyer may suffer, or incur relating to any Product, including but not limited to, loss of revenue or profits, damages, or losses as a result of Buyer's inability to operate, or shutdown any of its plant or operations, loss of use of the Product or other equipment or the cost of substitute equipment, facilities or services, inability to fulfill contracts with third parties, claims of customers, damage to property or personal injury and damages or losses Buyer may suffer or incur as a result of claims, suits or other proceedings made or instituted against Buyer by third parties, whether public or private in nature. Buyer agrees to indemnify, defend, and hold Seller harmless from any and all liability, suits, demands, and claims for property damage or personal injury claimed or caused to any person or any other claim arising directly or indirectly out of the use and operation of the Product if modified mechanically or electrically by Buyer.

15. TERMINATION GENERALLY: Except as otherwise expressly provided in this Contract, this Contract is not subject to termination in whole or in part.

16. BUYER'S DEFAULT AND TERMINATION: The following shall be defaults by Buyer under this contract:

(a) Any failure to make any payment required hereunder within thirty days following the date specified therefore.

(b) Any other failure by Buyer to comply with or perform any of its obligations under the Contract when required if not cured to Seller's satisfaction within ten days of the receipt of notice thereof.

(c) The institution of any proceedings by or against Buyer, voluntarily or involuntarily, under bankruptcy or insolvency laws or for the appointment of a receiver or trustee of Buyer or its assets or any assignment of its assets for the benefit of creditors or any other admission of its inability generally to pay its debts when due.

In the event of any such default, Seller may, without any obligation or liability to Buyer, terminate this Contract immediately by written notice to Buyer. Such action by Seller shall not waive any of Seller's rights or remedies with respect to such default. Buyer shall be liable to Seller for all damages or losses, including loss of reasonable profits, and for costs and expenses, including attorney's fees, sustained by Seller arising from Buyer's default under this Contract. If Seller, if such a default occurs and Seller repossesses or retains the Product. Seller's damages shall be no less than the price specified in this Contract, plus, freight, storage, handling and all other disposal costs, less the then current reasonable scrap value of the Product.

17. BUYER FURNISHED MATERIALS AND SERVICES: Unless otherwise specifically provided herein, Buyer shall, at its expense, furnish: any building or other structure required to house the Product, assuming all responsibility for proper strength of same; location of the Product at site of installation, all foundations including excavation, concrete, reinforcements, etc., auxiliary units not integral parts of equipment specified, such as electrical wiring and conduit, protective guards, dust piping, dry compressed air and air piping, tools, labor, and supervision for erection; and all other materials and services not specifically included in the Contract required to install, test, operate, and maintain the Product. If before, during or after the Product has been installed, Buyer determines that a product or service in addition to that herein contracted for is required for installation, testing, maintenance or operation which Buyer is unable or unwilling to furnish upon Buyer's request, Seller will provide a separate quotation for such product or service.

18. COMPLIANCE WITH MANUALS, INSTRUCTIONS AND GOOD SAFETY PRACTICES: Buyer shall be responsible for ensuring compliance by its personnel and others given access to any product in Buyer's possession or control with all operating and maintenance manuals and instructions provided by Seller or any component supplier and with other normal safety, operation and maintenance practices commonly observed in the trade.

19. MISCELLANEOUS

(a) **WAIVER:** No Employee or other representative of Seller has any authority to waive, change, modify or add to the terms of this Contract without prior written approval by the President or a Vice President of Seller.

(b) **ASSIGNMENT:** Neither this Contract in its entirety nor any right or interest herein may be assigned by Buyer without prior written agreement by the Seller. Any such attempted assignment shall be void.

(c) **LAW GOVERNING:** This Contract and Buyer's acceptance thereof shall be interpreted in accordance with the laws of the State of Wisconsin, without regard to principle of conflicts of laws.

(d) **PRINTED LITERATURE:** Seller reserves the right to change the Product design from that stipulated in any printed bulletin or brochure without written notice. Seller's proposal (and specifications in any other Contract document) shall be the governing Product specifications.

(e) **ARBITRATION:** All disputes arising in connection with or relating to this Contract or the breach thereof shall be finally settled, if Seller so elects, by arbitration in accordance with the rules then in force of the American Arbitration Association. The award of the arbitrators shall be final; the parties shall not contest or seek other relief from the award in any court. Judgement upon the arbitration award may be rendered in any court having jurisdiction. Any arbitration under this clause shall be held in Milwaukee, WI.

PROPOSAL

**JLG
1 JLG Drive
McConnellsburg, Pennsylvania 17233**

Attention: Mr. Paul Nero

**Installation location:
Jefferson City, Tennessee**

Paint Finishing System

March 28, 2023

PROPOSAL NO: 20373 Revision 12

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OVERVIEW OF EQUIPMENT

Belco Industries, Inc., will design, fabricate, and install the following for continuous operation, floor mounting and natural gas heat:

- One (1) 6 Stage Pretreatment Washer
- One (1) 40 GPM Wastewater Treatment System
- One (1) 30 GPM R.O. Water System
- One (1) Moisture Drying Oven
- Two (2) Paint Booths
- One (1) Paint Circulation System
- One (1) Flash Tunnel #1
- One (1) Flash Tunnel #2
- One (1) Paint Cure Oven
- One (1) PLC Controls System

SPECIFICATIONS

Operation Services

Fuel:	1,000 BTU natural gas @ 5 PSI
Electrical:	460/3/60 service with 120/60 for control circuits through step down transformer in control panel.
Water:	Line pressure 45 to 60 PSIG
Compressed Air:	Line pressure 80 to 90 PSIG
Paint:	Equipment: One (1) shop coat Belco blue enamel All safety equipment: One (1) shop coat Safety yellow enamel Control Panel: One (1) shop coat gray enamel

Design Specifications:

Conveyor Speed:	Varies – 7.5 carriers per hour
Conveyor System:	4" Power & Free
Part Rack Weight:	8,500 pounds maximum
Typical Work Package:	102" wide x 90" high x 21'-0" in direction of travel with 87 3/4" from top of conveyor rail to top of part
Work Opening:	120" wide x 108" high with 78 3/4" from top of conveyor rail to top of work opening

COMPONENT DETAILS

6 STAGE PRETREATMENT WASHER

Stage	Time	Temperature	Length
Entrance			10' – 0"
1st – Alkaline Cleaner	120 sec.	130° F	6' – 9"
Drain			19' – 0"
2nd – C.W. Rinse	60 sec.	Ambient	3' – 9"
Drain			19' – 0"
3rd – Neutralizer	60 sec.	Ambient	3' – 9"
Drain			19' – 0"
4th – Nano	60 sec.	100° F	3' – 9"
Drain			19' – 0"
5th – C.W. Rinse	60 sec.	Ambient	3' – 9"
Drain			19' – 0"
6th – C.W. Rinse	60 sec.	Ambient	3' – 9"
Exit			22' – 0"

Washer Cross Section

- 16'-0" wide, includes 3'-0" tank extension at side of unit
- 13'-0" wide housing
- 19'-9 3/4" high from customer's finished floor to top of conveyor rail
- 12" high raised entrance and exit vestibules
- 10'-9" high housing
- 14'-7" overall washer height
- 152'-6" overall washer length
- Additional 15'-0" long drain pan before the entrance of the washer to collect any cascading water from the parts
- Single pass design
- Placed on customer concrete floor

Tank Fabrication

- Double welded construction (inside and out)
- Bottom pitched to drain connection facilitating cleaning
- Bottom sloped from back to front minimum of 1/2" per 12" of tank width
- Extends 3'-0" out from side of housing for pump mounting, removal of screens and access to tank interior
- Integral structural steel base and frame for safe support when filled
- Solution capacity approximately 2-3 times the pump rate for the stage minimum

Tank Capacity

Stage	Gallons	Width	Solution Height	Length	Tank Material
1 st	3,590	16'-0"	2'-6"	12'-0"	3/16" 304 SS
2 nd	2,400	16'-0"	2'-6"	8'-0"	3/16" 304 SS
3 rd	2,400	16'-0"	2'-6"	8'-0"	3/16" 316 SS
4 th	3,590	16'-0"	2'-6"	12'-0"	3/16" 316 SS
5 th	2,400	16'-0"	2'-6"	8'-0"	3/16" 316 SS
6 th	1,800	16'-0"	2'-6"	6'-0"	3/16" 316 SS

Drain and Overflows

- 3" drain with wafer type butterfly valve
- 2" overflow connected to drain after valve
- Material to be compatible with associated stage

Overflow Gutter

- Located 6" below tank top
- 4" wide pitched toward overflow outlet connection
- 2" minimum depth
- 7-gauge construction of material compatible with associated stage

Sludge Screens

- Supplied in pairs to protect pump when cleaning
- All screens fabricated of #4 mesh, 16-gauge 304 stainless steel wire
- Equipped with handle extended above the solution level for safe removal

Fresh/R.O. Water Connection

- Tanks supplied with automatic level control to protect pumps and heating equipment
- All tanks with 1 ½" manual quick fill line
- All tanks with ¾" slow opening fill line operated from level control
- Fill line of anti-siphon arrangement to meet local codes

Pumps, Motors, Nozzles

Stage 1

- Pump to be vertical barrel mount
- Cast Iron construction with stainless steel shaft and impeller
- Pump capacity of 1,150 GPM @ 60' of head
- 30 HP TEFC motor, 1,800 RPM, C face mount, 460/3/60
- IEC motor starter
- 320 – glass reinforced polypropylene flat spray nozzles
- Nozzles snap on design rated at 3.5 GPM @ 20 PSI
- One (1) misting riser at the exit of Stage #1
- 12 – glass reinforced polypropylene hollow cone spray nozzles
- Nozzles snap on design rated at 0.24 GPM @ 20 PSI, 75°

Stage 2

- Pump to be vertical barrel mount
- Cast Iron construction with stainless steel shaft and impeller
- Pump capacity of 700 GPM @ 60' of head
- 20 HP TEFC motor, 1,800 RPM, C face mount, 460/3/60
- IEC motor starter
- 192 – glass reinforced polypropylene flat spray nozzles
- Nozzles snap on design rated at 3.5 GPM @ 20 PSI
- Two (2) misting risers, one (1) at the entrance of Stage #2 and one (1) at the exit of Stage #2
- 24 – glass reinforced polypropylene hollow cone spray nozzles
- Nozzles snap on design rated at 0.24 GPM @ 20 PSI, 75°

Stage 3

- Pump to be vertical barrel mount
- All stainless-steel construction below cover plate
- Pump capacity of 700 GPM @ 60' of head
- 20 HP TEFC motor, 1,800 RPM, C face mount, 460/3/60
- IEC motor starter
- 192 – glass reinforced polypropylene flat spray nozzles
- Nozzles snap on design rated at 3.5 GPM @ 20 PSI
- Two (2) misting risers, one (1) at the entrance of Stage #3 and one (1) at the exit of Stage #3
- 24 – glass reinforced polypropylene hollow cone spray nozzles
- Nozzles snap on design rated at 0.24 GPM @ 20 PSI, 75°

Stage 4

- Pump to be vertical barrel mount
- All stainless-steel construction below cover plate
- Pump capacity of 700 GPM @ 60' of head
- 20 HP TEFC motor, 1,800 RPM, C face mount, 460/3/60
- IEC motor starter
- 192 – glass reinforced polypropylene flat spray nozzles
- Nozzles snap on design rated at 3.5 GPM @ 20 PSI
- Two (2) misting risers, one (1) at the entrance of Stage #4 and one (1) at the exit of Stage #4
- 24 – glass reinforced polypropylene hollow cone spray nozzles
- Nozzles snap on design rated at 0.24 GPM @ 20 PSI, 75°

Stage 5

- Pump to be vertical barrel mount
- All stainless-steel construction below cover plate
- Pump capacity of 700 GPM @ 60' of head
- 20 HP TEFC motor, 1,800 RPM, C face mount, 460/3/60
- IEC motor starter
- 192 – glass reinforced polypropylene flat spray nozzles
- Nozzles snap on design rated at 3.5 GPM @ 20 PSI
- Two (2) misting risers, one (1) at the entrance of Stage #5 and one (1) at the exit of Stage #5
- 24 – glass reinforced polypropylene hollow cone spray nozzles
- Nozzles snap on design rated at 0.24 GPM @ 20 PSI, 75°

Stage 6

- Pump to be vertical barrel mount
- All stainless-steel construction below cover plate
- Pump capacity of 620 GPM @ 60' of head
- 20 HP TEFC motor, 1,800 RPM, C face mount, 460/3/60
- IEC motor starter
- 192 – glass reinforced polypropylene flat spray nozzles
- Nozzles snap on design rated at 3.1 GPM @ 15 PSI
- One (1) misting riser at the entrance of Stage #6
- 12 – glass reinforced polypropylene hollow cone spray nozzles
- Nozzles snap on design rated at 0.24 GPM @ 20 PSI, 75°

Supply Piping

- Flanged butterfly valve to regulate fluid pressure at nozzles
- Pressure and temperature gauges in all discharge piping
- Stage #1 and #2 tanks pump discharge to header to be fabricated of type 304L stainless steel
- Stage #3, #4, #5, and #6 tanks pump discharge to header to be fabricated of type 316L stainless steel
- Tank #1 headers and risers to be fabricated of type 304L stainless steel
- Tanks #2, #3, #4, #5 and #6 headers and risers to be fabricated of Schedule 80 CPVC
- Risers mounted to headers on 9" centers
- Nozzles mounted to risers on 12" centers
- Misting nozzles mounted to risers on 16" centers
- Risers to have quick disconnect fittings for easy maintenance

Housing

- Stages #1 and #2 housing to be fabricated from 12-gauge type 304L stainless steel
- Stages #3 through #6 housing to be fabricated from 12-gauge type 316L stainless steel
- Housing to be "split top" design to allow for Power & Free Conveyor Completely welded inside with additional stitch welds outside for strength
- Complete structural reinforcement to carry the weight of the conveyor and load
- Preassembled in the factory to reduce the installation time

Combustion Equipment

- Stage #1 heat input of 5,000,000 BTU/HR
- Stage #4 heat input of 2,500,000 BTU/HR
- Direct fired serpentine immersion tube
- Stage #1 Immersion tubes fabricated of 304L stainless steel with long radius elbows
- Stage #4 Immersion tubes fabricated of 316L stainless steel with long radius elbows
- IEC motor starter
- Electronic push button igniter
- Fully approved flame safety
- Modulating temperature control for better accuracy and lower operating cost
- Complete gas train components and piping per NFPA 86 based on 5 PSI natural gas
- Automatic safety shutoff valve
- Low and high gas pressure detection switches
- Air flow switches for proof of air flow at all fans
- Purge timer
- UV flame detector
- Solid state temperature controller
- Audible alarm for immediate notification of flame failure
- All piping preassembled in the factory, broken down and packaged prior to shipping for easy final assembly in the field

Walkways

- Full width, removable walkways over all tanks for safety
- Walkways rigidly supported for maximum load carrying capability
- Grating fabricated of GW100 stainless steel
- Grating clips to secure grating to structural members to meet all applicable codes

Work Shrouds

- Provided at all stages to cut down on overspray
- Shrouds are fabricated of the same material as the corresponding stage

Drip Shield

- Sloping drip shield in exit vestibule designed to reduce dripping on clean parts
- Shield is located under the vent stack and runs to within 6" of the side wall

Access Doors

- Access doors in each drain zone when practical
- Large 30" X 72" opening (or sized as housing allows) for easy maintenance access
- Doors to be flush with housing
- Full sized access platform with stairs and railing for safe entrance and exit
- Positive latching Brixon style latches, double spring but still allowing escape from interior
- Weep troughs under each door to eliminate unsightly chemical buildup
- Weep troughs to drain back to wash tank
- Swing-in dock lights with GFCI duplex outlets for maintenance

Drain Decks

- In the vestibules and between tanks, heavy duty 10-gauge drain decks are supplied
- Drain zones designed to prevent smaller parts from drying between stages
- Drain decks fabricated of same grade metal as the preceding stage
- Sloped and reinforced to reduce “Oil Canning” from maintenance traffic
- Drain decks to be engineered with the 2/3, 1/3 drain design

Ventilation

- Two (2) heavy duty tube-axial fans at entrance and exit to contain mist and steam
- Fans to be 304 stainless-steel
- Each fan sized to exhaust 16,290 CFM @ 1” SP
- Includes extended grease fittings, motor drive and base
- 10 HP, 1,750 RPM, TEFC motor, C-face mount
- IEC motor starters
- Mist eliminators
- 20 feet of stainless-steel stack for each fan (roof flange, shelter, etc., by customer)

Paint

- All exterior mild steel to be painted one coat customer specified color
- All stainless steel to remain unpainted

Air Force 1 Blow-Off

- Two (2) - 20 HP blowers, each powering a total of ten Mid-Range, 4” Air Cannons to target from overhead and sides of the exit
- A complete support grid for the Air Cannons will allow the nozzles to be mechanically targeted while allowing easy future adjustability
- The Air Cannons have been designed and patented to achieve a much higher impact on the distant surfaces area then other nozzles
- Equipment provided to include:
 - Two (2) - Model AF1-MS-STL-BIP20-36NF Air Force 1 Blower, coated steel impeller, powder coated steel housing and steel base for chemical resistance, low maintenance direct drive design with a 20HP, 3ph, 60Hz, 460VAC, 3600RPM, Premium Efficiency Motor. Blowers complete with mounting tube and inlet and outlet flex connections.
 - Two (2) - Model AF1-MS-IFH-2X Air Force 1 Inlet Filter Housing, constructed of galvanized steel, and designed to accommodate two standard sized panel filters. First set of filters provided with system.
 - Two (2) - Model AF1-TAP12-10x4 Distribution Plenum, galvanized steel with flex hose outlets. To be coupled to the blower outlet via flex hose connection.
 - Twenty (20) - Model AF1-AC125-4 Air Force 1 Air Cannons (Patented), hard anodized with cast aluminum air accelerator and focusing insert, aluminum body and mounting brackets.

- One (1) - Model AF1-MS-BSE Air Force 1 Blower Sound Enclosure, custom fabricated to fit MS series blower, galvanized steel walled with acoustical lined casing and baffle design for sound attenuation. Sound Enclosure complete with Magnehelic Gauge and mounting bracket.
- One (1) - AF1-ILS-12 Air Force 1 Inline Duct Silencers, galvanized, includes perforated interior walls with sound absorbing materials between interior and exterior housing.
- One (1) lot - Model AF1-WC-4 Wall/Floor Clamps made of aluminum/magnesium for positioning the support grids, for use with included pipe.
- One (1) lot - Model AF1-CC-4 Crossover Clamps made of aluminum/magnesium for positioning the support grids and targeting the Air Cannons, for use with included pipe.
- One (1) lot - 1" Aluminum Pipe for Air Cannon support grids.
- One (1) lot - Flexible Hose (4") with all stainless-steel hose clamps.
- One (1) lot - Supply Duct, galvanized steel; includes splitter wye, elbows, straight duct, and flanges, from the blower to the distribution plenums.

NOTE:

Ducting is based on the blowers being no more than 15 feet away from the blow off location

- One (1) lot - AutoCAD or SolidWorks drawings of system setup.

40 GPM WASTEWATER TREATMENT SYSTEM

General

- One (1) Alar Continuous Wastewater Treatment System
- 40 GPM
- Equipment to be skid mounted, pre-piped and pre-wired on one structural steel skid.

Continuous Flow Chemical Treatment Skid:

One (1) Copolymer Polypropylene Tank

- Approximately 3,100 total gallons
- Split into four (4) chambers

One (1) Handheld pH Meter

- For off system calibration
- Includes cable
- Used with Digital Probe on Acid Chamber or Caustic Chamber

One (1) NEMA 12 Control Panel

- Chemical and press controls
- Allen Bradley MicroLogix PLC
- 7" HMI

One (1) Acid Addition Chamber

- Turbine mixer with 304 stainless steel mixer shaft and prop
- Mixer controls mounted in Control Panel
- Digital pH probe with Kynar holder mounted inside of tank

One (1) Caustic Addition Chamber

- Turbine mixer with 304 stainless steel shaft and prop
- Mixer controls mounted in Control Panel
- Digital pH probe with Kynar holder mounted inside of tank

One (1) Floc Chamber

- Turbine mixer with 304 stainless steel shaft and prop
- Mixer controls mounted in Control Panel

Two (2) Filter Feed chambers

- Two (2) Turbine Mixers with 304 stainless steel shafts and props
- Mixer controls are mounted in Control Panel
- Non-contact Radar Level Controls
- 1½" Stainless Steel Air Operated Diaphragm Pump mounted on tank to feed chemically treated wastewater to the MK800-106P Filter Press, includes filter, regulator, control valve

One (1) LMI Metering Pump (for acid addition)

- Pedestal mounted
- Proportionally controlled

One (1) LMI Metering Pump (for caustic addition)

- Pedestal mounted
- Proportionally controlled

One (1) Polymer Make-Down Addition System

- HDPE Tank
- Epoxy Coated Carbon Steel Cover with half-moon shaped door (to add dry polymer)
- Mixer, mixer shaft and propeller (mixer controls mounted in Control Panel)
- Air Diaphragm Pump mounted on tank lid

4000-Gallons FRP, Flat Bottom Equalization Holding Tank

- Stainless steel mixer shaft and prop
- Radar Sensor Level Controls
- 1½" Poly feed pump

One (1) Alar Micro-Klean Model MK800-106P Filter Press

- 800MM 10.60 ft³ expandable to 13.78 ft³
- Twenty-one (21) gasketed 800mm polypropylene plates, expandable to twenty-seven (27)
- One (1) cleaning spatula
- Discharge inlet manifold
- Built in hydraulic reservoir on hydraulic pump
- Automatic Open/Close hydraulic ram (with flip of a lever)
- PLC controlled auto-pressure increase with proportional Control Valve/Regulator and Pressure Transmitter to Filter Press Feed Pump, utilizes PLC and HMI on Chemical Treatment System
- Air Hammer for changing filter cloths, reduces time by more than half

Hydraulic Assembly

- Pneumatic Hydraulic Pump
- Open/Close Selector Switch Hydraulic Gauge
- Hydraulic Relief Valve
- Hydraulic Oil Reservoir

Operation

- The general process for the treatment involves two basic steps: first, a chemical treatment to facilitate the removal of colloidal particles, and second, physical removal of suspended solids. The operation of the system is automatic. An operator is required to add water to one dissolving tank. The dirty water transfer pump and chemical treatment cycle is automatic.

Chemical Treatment Cycle

- The wastes are analyzed for pH concentration and the chemicals are automatically added in the proper amount, sequence, time, and rate, under controlled agitation. This conditioned water automatically flows from the pH adjustment tanks to the filter feed tank.

Filtration Cycle

- The operation of the filter is manual. The operator closes the filter press and turns on the filter feed pump. The effluent is then pumped into the Micro-Klean filter press. The filter cloth captures the suspended solids whereas the liquid passes through the filter for discharge down the sewer. During the filtration cycle, the system will automatically adjust the pressure regulator for the filter feed pump.

Cleaning Cycle

- When the filtration cycle is complete, the operator will turn on the air purge valve. The solids are purged with air for approximately 20 minutes. After this time, the operator will retract the hydraulic ram and separate the filter plates to release the dry solids for disposal.

NOTES:

The Wastewater Treatment System design is “PRELIMINARY” and is subject to change when accurate discharge information is provided by JLG.

The Wastewater Treatment System is designed with enough capacity to treat wastewater from the Belco proposed Powder Finishing System and the Belco proposed Paint Finishing System.

30 GPM REVERSE OSMOSIS SYSTEM

Pre-Treatment

- Backwash Carbon Filter ACA-30G-2 W/ Fleck NXT2 timer, 15 Cu/Ft media (115V/1PH power)
- Twin Backwash Softener MAT-300-1 ½ W/ Fleck SXT timer, 10 Cu/Ft resin each (115V/1PH power)

RO System

- MRO-43K-8H-1L RO System
- 30 GPM permeate flow
- Painted carbon steel frame

Holding Tank & Accessories

- 6,100 gallons white poly holding tank, 120" x 139"
- 20" vent filter housing w/ 0.2-micron vent filter
- Tank level pressure switch RO On/Off

Distribution Pump & UV Skid

- Grundfos CMBE10-54 pump, 2HP, 50GPM @ 40PSI (230/1PH power)
- 0-60 GPM flow meter
- Stainless steel skid 2'0" x 2'-6" approximate
- Pre-piped & pre-wired

NOTES:

The R.O. Water System is designed with enough capacity to supply water to the Belco proposed Powder Finishing System and the Belco proposed Paint Finishing System.

It is the customer's responsibility to provide 62 GPM at 60 PSI feed water to the RO system.

MOISTURE DRYING OVEN

General

- Moisture Drying Oven with end entrance and exit
- Floor mounted, single pass
- Entrance and exit air seals
- Natural gas fired
- 15 minutes total dwell time in heat zone
- Heat zone designed for 250° F. operating temperature
- Heat zone 14'-4" wide x 22'-2" high x 53'-0" long
- Oven overall size to be 15'-0" wide x 22'-6" high x 65'-0" long
- Heat house to be side mounted and will extend out another 8'-0" (23'-0" overall width)

Oven Shell

- Built of 24" wide self-supporting oven panels, for more structural support than wider panels
- Tongue and groove design for easy field installation and replacement
- 4" thick with 4# density thermafiber industrial, semi-rigid insulation
- Inner and outer skins of aluminized steel
- End and side headers between skins are perforated to cut down on heat transmission from inside to outside of oven

Oven Access Door

- Heat zone to include one (1) access door and heat house to include one (1) access door for maintenance, inspection, and explosion relief area
- Door frames to be beveled and include inner tadpole seal to reduce solvent and heat loss
- Door frame fabricated of heavy 14-gauge aluminized steel with heavy-duty exterior hinges
- Door latch to be Brixon-style latch providing a positive seal but will release for safety exit if required

Supporting Steel

- Interior of oven
- Mild steel structural steel columns
- Mild steel structural steel overhead supports also carry conveyor load
- Proper cross bracing, gussets, anchor plates, etc., as required

Recirculation Fan

- Air kit style fan with forward curved wheel and all welded housing
- Fan sized for 42,500 CFM @ 3" SP (approximately 2.5 volume air changes/minute)
- 40 HP TEFC motor, 1,800 RPM, 460/3/60
- IEC motor starter
- Structural steel base and frame

Air Seal Equipment

- Powered air seal located at entrance and exit vestibule
- Two (2) plug-type centrifugal fans, PLR wheel, all welded housing
- Each fan sized for 21,250 CFM @ 3" SP
- 20 HP TEFC motor, 1,750 RPM, 460/3/60
- IEC motor starters
- Structural steel base and frame

Ductwork and Fittings

- All duct and fittings 20 aluminized steel
- Elbows, flanges, clips, dampers, etc., required are all included
- Suction side of fans includes fresh air filter box
- Filter to be 20" X 20" high temperature
- Duct to be fabricated for easy field installation
- Sized to meet industrial ventilation standards
- Ductwork to utilize adjustable supply air tabs for recirculation air

Combustion Equipment

- One (1) Access burner or equivalent, 3,500,000 BTU/hour max.
- IEC motor starter
- Electronic push button igniter
- Fully approved flame safety
- Modulating temperature control for better accuracy and lower operating cost
- Complete gas train components and piping per NFPA 86 based on 5 PSI natural gas
- Automatic safety shutoff valve
- Low and high gas pressure detection switches
- Air flow switches for proof of air flow at all fans
- Purge timer
- UV flame detector
- Solid state temperature controller
- Audible alarm for immediate notification of flame failure
- All piping preassembled in the factory, broken down and packaged prior to shipping for easy final assembly in the field

Exhaust Equipment

- General Purpose type, class II, arrangement 10 fan with PLR wheel
- Sized to properly exhaust all products of combustion and VOCs to meet NFPA requirements
- Fan sized for 5,700 CFM @ 1" SP
- 3 HP TEFC motor, 1,800 RPM, 460/3/60
- IEC motor starter
- Variable frequency drive
- Structural steel base and frame
- 20 feet of aluminized steel stack (roof opening, flange, shelter, etc., by customer)

Paint

- Oven exterior black iron to be painted one coat customer specified color
- Oven aluminized trim and panels to be unpainted

PAINT BOOTHS - TWO (2) #DTPDF5036 DOWNFLO PAINT BOOTH

General (Each Booth)

- Paint booths to sit on customer concrete floor
- Paint booths require a customer supplied pit (dimensions to be determined) for downdraft exhaust air
- Pit engineering design by Belco
- Working Dimensions: 19'-0" wide x 16'-0" high x 30'-0" deep
- Outside Dimensions: 19'-0" wide x 19'-0" high x 30'-4" deep

Description

- The #DTPDF5036 Downflo is a single skin, full downdraft spray booth utilizing AFC's unique 6' wide, double row exhaust pit for balanced airflow.

Construction

- 18-gauge, galvanized sheet metal panels. The panels use interlocking flanges for a sturdy, airtight joint. Panels are joined with 1/4" self-drilling TEK screws for easy assembly. To ensure a dust free environment in the paint booth the panels are sealed with acrylic latex caulking. The ceiling of the booth is fabricated in a "split-top" design to allow the conveyor trolley's, chain, and load bar to be protected from overspray in the upper portion of the booth. A 14-gauge angle is used to anchor the paint booth to the floor.

Access Doors

- Two (2) access doors, 3' wide x 7' high, includes 18" x 30" observation window with clear tempered glass. Door is constructed of 18-gauge steel, double walled with tube frame for durability. Door frames are made of 12-gauge steel angle and are equipped with heavy duty hinges. Durable rubber gasket and Brixon latch ensure an airtight seal and provide explosion venting to comply with national fire codes.

Light Fixtures

- Twenty (20) 4-tube (total of 144 light tubes), 120 VOLT 4' LED light fixtures. Four (4) of the thirty-six light fixtures will be rated as Class 1 Division 2 for placement in a Class 1 Division 2 area (within 3' of any door opening) as required by national codes. All light fixtures are ETL listed.

Intake Plenum

- Clean air is introduced into the paint booth through a ceiling-type intake plenum located at the top of the booth enclosure. The intake plenum is equipped with AFC's exclusive disperser basket, which always ensures even airflow into the paint booth cabin. It is designed with a quantity of twenty-four (24) 36"x54" Laminar III diffusion intake filters. These intake filters provide over 99% efficiency at 10 microns. Intake filters are designed to last approximately 1,500 hours and are easily accessed from AFC's hinged, drop-down intake filter racks.

Exhaust Fans

- One (1) 42", 6-blade AFC exhaust fans used to pull overspray from the paint booth. This fan provides a total of 27,000 CFM @ ½" S.P. Fans are tube axial, belt driven, with non-sparking polypropylene blades. A streamlined belt tunnel isolates the motor, drives and bearings from the air stream. One (1) 10HP O.T.D.P. 230 VAC 3-phase motor is used to drive the exhaust fan. Motors are energy efficient industrial motors that meet or exceed EPACT energy standards.

Exhaust Plenum and Duct

- The #DTPDF5036 Downflo is designed with a 6' wide, double row exhaust pit with two (2) rows of rugged steel grating with a single row of steel diamond plate in the center. Two (2) rows of 20" fiberglass exhaust paint arrestor media provide excellent paint overspray removal and protection of AFC's exhaust system. A total of 21'-0" of 42" diameter exhaust duct is provided along with roof flashings, storm collar and up-flow type weather caps with back draft damper. This is enough exhaust duct to terminate 6'-0" above a 20'-0" flat roof based on a straight run of exhaust with no offsets. Local codes may require a discharge point of 30'-0" from property line. Exhaust duct is constructed from 20-gauge galvanized steel with crimped ends for easy assembly.

Included Accessories

- All necessary door gasket, caulking and assembly hardware are provided. Also provided are one (1) manometer, two (2) door limit switches and one (1) air valve as required by national codes.

Control Panel

- The AFC 700TS automated control panel controls the paint booth and the AFC DFM heated air make-up system. Includes:
- System switch to switch between paint, cure, and off modes
- Flash, cure, and cool timers used in cure mode
- Motor protection and control devices
- Digital Paint and cure thermostat
- Digital booth thermometer
- Hour meter to log booth run hours
- Burner on/off switch
- Lighting on/off switch
- Terminal strip for easy field wiring of all factories supplied components on paint booth
- VFDs for Exhaust & AMU motors for booth balancing
- Digital readout for detecting exhaust filter load

Air Make-Up System

- Direct fired (flame directly in air stream) air make-up unit which provides excellent efficiency and rapid booth temperature rise of up to 80° F. above 0° F. The unit also works to maintain positive pressure inside of the paint booth cabin during painting operation which results in cleaner paint jobs.
- Digital temperature controls and modulating gas valve ensure minimum temperature fluctuation inside of the booth.
- This unit will be installed on the top of the booth.
- Burner: Power Flame gun-type burner rated at 2,500,000 BTU. (Low NOx burner option available, if required.) Honeywell flame safeguard control, UV scanner, electric spark igniter, ignition transformer, pilot and main gas valves, pilot and main gas regulators, leak test valve, combustion blower with automatic inlet louvers, on/off switch, indicator lights, lockout alarm bell, control cabinet with terminal strip for easy servicing.
- The burner is safely fueled by natural gas.
- Intake Fan: One (1) 42" AFC intake fan rated at 27,000 CFM. Fan is tube-axial, belt driven, with non-sparking polypropylene high temperature blades. A streamlined belt tunnel isolates the motor, drives, and bearings from the air stream. One (1) 10 HP, O.T.D.P., 230 VAC, 3-phase motor is used to drive the intake fan. Motors are energy efficient industrial motors that meet or exceed EPACT energy standards.
- Necessary duct and damper to divert approximately 7,500 CFM of air above conveyor opening.
- Intake Duct: Includes 6' of intake duct with 90-degree elbow and flashing for secure connection between the air make-up unit and the paint booth.
- Included Accessories: Includes air make-up unit support platform and prefilter box with polyester intake panel filters. Also includes high temperature limit switch, air flow switch and service disconnect.

PAINT CIRCULATION SYSTEM WITH GRACO SMART KITCHEN

General

- System proposed will be six (6) recirculating color systems, one (1) solvent system, one (1) catalyst system, one (1) prime system, and two (2) piggable systems for JLG in Jefferson City, TN. This quote is for all electric Graco Smart Kitchen
- Viper will provide and install all the stainless-steel tubing to the two spray booths. Our piping will drop down at each application station in the booths and will terminate with a tee and a 3/8" ball valve. We will supply and install the pumping station equipment, and it will be mounted on back panels.

<u>Quantity</u>	<u>Description</u>
11	6 color systems, 1 solvent system, 1 catalyst system, one prime system, and two piggable systems 9 Graco E-FLO pumps, 2hp, 1000, ADV, TRI, SLD, STND #EC2D41 2 Graco Enduraflo 4D350 pumps 2 Solvent flush kits 4 Piggable color stacks 11 Graco filters 11 Runaway valves 11 Kit Display #17V232 11 Cable, I.S.CAN. F STD TO F REV #16P911 11 Kit Pressure, Sensor, Sanitary #24x089 9 Transducers, I/P #24V001 11 Regulators, BP, Air pilot, Low-Flow #25R487 9 Kit, Sensors, Radar, Haz, FM #25D293 7 Husky Pumps, 515AC-PPO1AAC3SSPTPTPTO #D51311 7 Kit Pump, Transfer #17S959 1 Control, Pump, Transfer #24Z671 7 Agitator, 6:1 Gear Reduction, Siphon #26B633 7 Agitator, Direct Drive #25M481 7 80 Gallon Stainless Steel Tanks Misc. Fluid Hose / Fittings needed to install IPK control items for 11 systems 1 Box, Control, Touch Screen #25A693 1 Box, Supervisor #25A830 1 Box, Additional Pumps #25A843 1 Module, Protocol, Conv. And DAQ #18C235 9 Kit, Converter FO #24N978 11 Cable, F.O., Informer Upgrade #16M172 11 3' x 3' Module frames for pump stands 1 Lot Siphon and Return Tubes and Hoses 1 Lot 3/4" Stainless Steel Tubing for Module 1 Lot 3/4" Stainless Steel Tubing for Recirculation 1 Lot Labor for Installation of the Hardware and Equipment Quoted

FLASH TUNNEL #1

General

- Floor mounted tunnel
- Single pass design with end entry and exit
- Inside dimensions 14'-0" wide x 22'-6" high x 70'-0" long
- 20 minutes dwell time

Enclosure Shell

- 18-gauge aluminized, 30" wide, false ceiling style, snap together panels
- Two (2) access doors 36" wide x 6'8" high

Supporting Steel

- Interior of tunnel
- Structural steel columns
- Structural steel overhead supports also carry conveyor load
- Proper cross bracing, gussets, anchor plates, etc., as required
- Purlin – 3 x 1 16-gauge MS tubing – 20' length (all field cut)

Supply Ventilation Equipment

- One (1) tube-axial air exhaust fan
- Fan sized for 30,800 CFM @ 1" SP
- 20 HP TEFC motor
- Variable frequency drive
- Structural support steel as required

Exhaust Ventilation Equipment

- One (1) tube-axial air exhaust fan
- Fan sized for 30,800 CFM @ 1" SP
- 20 HP TEFC motor
- Variable frequency drive
- Structural support steel as required

Paint

- Tunnel exterior black iron to be painted one coat customer specified color
- Tunnel aluminized trim and panels to be unpainted

FLASH TUNNEL #2

General

- Floor mounted tunnel
- Single pass design with end entry and exit
- Inside dimensions 14'-0" wide x 22'-6" high x 35'-0" long
- 10 minutes dwell time

Enclosure Shell

- 18-gauge aluminized, 30" wide, false ceiling style, snap together panels
- Two (2) access doors 36" wide x 6'8" high

Supporting Steel

- Interior of tunnel
- Structural steel columns
- Structural steel overhead supports also carry conveyor load
- Proper cross bracing, gussets, anchor plates, etc., as required
- Purlin – 3 x 1 16-gauge MS tubing – 20' length (all field cut)

Supply Ventilation Equipment

- One (1) tube-axial air exhaust fan
- Fan sized for 30,800 CFM @ 1" SP
- 20 HP TEFC motor
- Variable frequency drive
- Structural support steel as required

Exhaust Ventilation Equipment

- One (1) tube-axial air exhaust fan
- Fan sized for 30,800 CFM @ 1" SP
- 20 HP TEFC motor
- Variable frequency drive
- Structural support steel as required

Paint

- Tunnel exterior black iron to be painted one coat customer specified color
- Tunnel aluminized trim and panels to be unpainted

PAINT CURE OVEN

General

- Natural gas fired with end entrance and side exit
- Entrance and exit air seals
- 35 minutes dwell time in heat zone
- Heat zone designed for 250° F. operating temperature
- Heat zone 32'-10" wide x 22'-2" high x 72'-0" long
- Oven overall size to be 33'-6" wide x 22'-6" high x 93'-0" long
- Two (2) heat houses will be mounted on the side of the oven and will extend out another 8'-0" each way (49'-6" overall width)

Oven Shell

- Built of 24" wide self-supporting oven panels, for more structural support than wider panels
- Tongue and groove design for easy field installation and replacement
- 4" thick with 4# density thermafiber industrial, semi-rigid insulation
- Inner and outer skins of aluminized steel
- End and side headers between skins are perforated to cut down on heat transmission from inside to outside of oven

Oven Access Doors

- Heat zone to include one (1) access door and each heat house to include one (1) access door for maintenance, inspection, and explosion relief area
- Door frames to be beveled and include inner tadpole seal to reduce solvent and heat loss
- Door frame fabricated of heavy 14-gauge aluminized steel with heavy-duty exterior hinges
- Door latch to be Brixon-style latch providing a positive seal, but will release for safety exit if required

Oven Structural Steel

- Structural steel support frames inside oven
- Structural steel columns
- Structural steel overhead supports also carry conveyor load
- Proper cross bracing, gussets, anchor plates, etc. as required

Recirculation Fan

- Two (2) Air kit style fan with forward curved wheel and all welded housing
- Each fan sized for 44,400 CFM @ 3" SP (approximately 2 volume air changes/minute)
- 40 HP TEFC motor, 1,800 RPM, 460/3/60
- IEC motor starters
- Structural steel base and frame

Air Seal Equipment

- Powered air seal located at entrance and exit vestibule
- Two (2) plug-type centrifugal fans, PLR wheel, all welded housing
- Each fan sized for 21,250 CFM @ 3" SP
- 20 HP TEFC motor, 1,750 RPM, 460/3/60
- IEC motor starters
- Structural steel base and frame

Ductwork and Fittings

- All duct and fittings 20 aluminized steel
- Elbows, flanges, clips, dampers, etc., required are all included
- Suction side of fans includes fresh air filter box
- Filter to be 20" X 20" high temperature
- Duct to be fabricated for easy field installation
- Sized to meet industrial ventilation standards
- Ductwork to utilize adjustable supply air tabs for recirculation air

Combustion Equipment

- Two (2) Access burner or equivalent, 2,500,000 BTU/Hour Max
- IEC motor starter
- Electronic push button igniter
- Fully approved flame safety
- Modulating temperature control for better accuracy and lower operating cost
- Complete gas train components and piping per NFPA 86 based on 5 PSI natural gas
- Automatic safety shutoff valve
- Low and high gas pressure detection switches
- Air flow switches for proof of air flow at all fans
- Purge timer
- UV flame detector
- Solid state temperature controller
- Audible alarm for immediate notification of flame failure
- All piping preassembled in the factory, broken down and packaged prior to shipping for easy final assembly in the field

Exhaust Equipment

- Two (2) General Purpose type, class II, arrangement 10 fans with PLR wheel
- Sized to properly exhaust all products of combustion and VOC to meet NFPA requirements
- Each fan sized for 6,750 CFM @ 1" SP
- 3 HP TEFC motor, 1,800 RPM, 460/3/60
- Variable frequency drive
- Structural steel base and frame
- 20 feet of aluminized steel stack **(roof opening, flange, shelter, etc., by customer)**

Paint

- Oven exterior black iron to be painted one coat customer specified color
- Oven aluminized trim and panels to be unpainted

SUPERVISORY CONTROL SYSTEM (PROGRAMMABLE LOGIC CONTROL)

- Belco's Supervisory Control System utilizes an Allen Bradley CompactLogix programmable logic control processor and PanelView Plus 1000 operator interface (HMI/MMI) with 10" color touch screen to control all functions of the equipment (except flame safety monitoring and high temperature limit control which are hard wired).
- The Supervisory Control System includes the following features:
 - Starting and stopping of motors, pumps, blowers, and fans, etc., as required.
 - Adjust temperature control set points and view actual temperature(s).
 - "Economizing" keeps track of the activity on the system via the integration of strategically placed photo eyes and will put areas not in use into an "idle" mode helping to save utility costs.
 - If no parts are detected for a predetermined time (time duration to be determined), the Supervisory Control System PLC program will drive the oven burners to a predetermined temperature set point. When parts are detected by the photo eyes, the PLC program will return the oven burners to operational temperature set point.
 - "Alarming" will alert and direct personnel to the cause of a problem, reducing time.
 - An alarm will be activated by the following:
 - ✓ Failure of any burner flame and combustion motor on Belco equipment.
 - ✓ Exhaust/supply fan motor failure.
 - ✓ Failure of a pretreatment washer pump motor.
 - ✓ Air flow switch failure.
 - The Supervisory Control System will keep a limited number of displays and alarms in the HMI.
- Belco will provide all motor starters, disconnects, fuses, contactors, relays, purge timers, flame safety equipment, etc., as called out elsewhere in this proposal.
- PLC will be furnished, installed, wired, and programmed by Belco Industries, Inc.
- All supplied programming will meet applicable standards, including NEC, IRI, and OSHA guidelines to insure safe operation of the equipment.
- PLC network capabilities – Ethernet port(s) and integrated Ethernet switch.
- We will mount in our electrical panel (and wire to all appropriate devices) rack-less I/O modules, with cards, power supply, etc., to allow control of the equipment through the PLC.
- The Allen Bradley CompactLogix processor is expandable for the addition of future I/O modules.
- Belco custom designed panel board, Hoffman enclosure, NEMA 12, enclosed type with all components, including PLC, I/O modules, mounted, wired, and tested prior to shipment. Panel to be painted one shop coat Laser blue exterior and one coat white enamel interior.

NOTE:

Control Panel will not include any push buttons, indicator lights or other control devices common to typical hard-wired electrical panels.

WASHER ENTRANCE SHOT REMOVAL

General

- Proposed 15'-0" drain pan to be replaced with 15'-0" additional washer housing
- 304 stainless steel tank of similar construction as proposed washer
- Pump to be vertical barrel mount
- Cast iron construction with stainless steel shaft and impeller
- Pump capacity of 300 GPM @ 60' head
- 10 HP, 1800 RPM, TEFC motor, C face mount
- Variable frequency drive
- Remote disconnect
- Two (2) pre-clean spray risers for shot removal
- 64 – glass reinforced polypropylene flat spray nozzles
- Nozzles snap on design rated at 4.3 GPM @ 30 PSI
- Shot capture basket to be outside the washer housing for easy access during basket clean out
- Removable 304 stainless steel mesh wire basket to capture shot knocked off by pre-clean risers before entering Stage #1
- 304 stainless-steel basket surround to catch draining solution

August 8, 2023



Andy Secor
Mike Best
JLG Industries
1 JLG Way
McConnellsburg, PA 17333

RE: Touch Up Booth Options—BUDGETARY for Jefferson City

Andy and Mike,

Thank you for the opportunity to work with you on the Touch Up Booth requirement for the new Paint Line in Jefferson City, TN. We believe we are well suited to provide the best solution at the best value by supporting the development in McConnellsburg and having On-The-Ground local support in Jefferson City.

Air Power has over 50 years' experience providing Industrial Finishing Systems including booths, ovens, paint delivery systems, proportioning systems and applicators. We are happy to be a part of the dialogue for the latest JLG endeavours in Jefferson City, TN. We are confident that we can supply and support the Touch Up Paint Booth for this location.

Please contact me with any questions or if additional information is required.

Regards,



Lorne Rickert
Account Manager
Air Power Manufacturing Solutions

Cc: Mark Richardson—Finishing Systems Application Specialist, Air Power
Eddie Rhodes—Account Manager, Air Power [out of Knoxville, TN]
Jerome Wood—Regional Sales Manager, Air Power



GLOBAL FINISHING SOLUTIONS

BUDGETARY PRICING:

Option 1:

Spray and Cure Paint Booth—160-degree cure temp
Side-Downdraft Air Flow
16' Wide x 14' Tall x 40' Long
Drive-Through Large Equipment Booth
(2) 12' x 12' Fabric Roll Up Doors
(1) AMU, (2) Exhaust Fans
Insight Controller with Touch Screen HMI w/ Auto-Balance
LED Lighting
(2) Personnel doors with observation windows
Duct work for (3) Stacks with 40' ceiling height estimated
\$233,355

Option 2:

Spray and Cure Paint Booth—160-degree cure temp
Side-Downdraft Air Flow
16' Wide x 14' Tall x 70' Long
Drive-Through; Dual Zone Large Equipment Booth
(3) 12' x 12' Fabric Roll Up Doors
(2) AMU's, (4) Exhaust Fans
Insight Controller with Touch Screen HMI w/ (2) Auto-Balances
Zone 1, Zone 2 and BOTH Controls
LED Lighting
(4) Personnel doors with observation windows
Duct work for (6) Stacks with 40' ceiling height estimated
\$420,015

Exceptions:

- Budgets are for Equipment Only
- No Installation—mechanical nor electrical is included
- No roof curbs or flashing is included
- No fire suppression or compressed air is included
- Process Enclosures Only



EQUIPMENT DETAILS:

OPTION 1:

GFS Equipment Type

Equipment Type:	Large Equipment Side-Downdraft Pressurized Booth
Internal Clear Working Dimensions:	16' W x 14' H x 40' L
Overall Dimensions (Approximate):	23' 8" W x 17' 8" H x 40' 4" L

Equipment Base Design

Equipment Panel Construction Type:	Single skin panels
Equipment Panel Construction Finish:	G90 galvanized
Equipment Panel Construction Material:	18 GA
Support Structure Construction Type:	I-Beam structure
Airflow Design:	Side Downdraft
Target Average Air Velocity (FPM):	50
Light Quantity:	24
Light Type:	LED T8 4-tube Lights

Exhaust Design

Total Design Exhaust CFM:	32,000
Exhaust Method Design:	Side-exhaust chamber
Exhaust Fan Framework:	(4) 24" Tube axial fan with 3 HP motor at 3/4" SP
Exhaust Filter Selection:	20x20x2 wave filters

Exhaust Ductwork Inclusions

Exhaust Duct Building Penetration:	Roof
Exhaust Duct Construction Design:	1 lot of spiral ductwork
Includes: (1) Access Door and (1) Roof Ventilator per Exhaust Fan with Lot of Ductwork and Connection Rings	
Exhaust Duct Roof Flange Quantity Included:	4
<i>Note: Duct Supports not Provided in this Quotation (Roof Flanges & Additional Items not Included Unless Listed)</i>	

Intake Design

Total Design Supply CFM:	32,000
Intake Method Design:	3' ceiling plenum
Intake Filter Selection:	20x20x1 tacky filters
Equipment Pressurization Provided Through:	AMU
Air Make-up Unit Configuration:	Horizontal indoor end discharge (booth mounted)
Air make-up Unit MBTU/Cure Temperature:	3.4 MBTU forced dry cure discharging at 160 degrees F
Air Make-up Unit Stand:	Booth Mounted
Air Make-up Unit Approximate Weight:	3,700 lbs (Approximate)
Air Make-up Unit Performance Operation:	Variable Air Volume (VAV)
Air Make-up Unit Variable Air Volume Design:	Paint Curing (VFD Supplied with AMU)
Air Make-up Unit Mechanical Information:	480V 3 PH 4 Wire with 20 HP AMU motor
Air make-up Unit Heating System:	Natural Gas
Air make-up Unit Approximate Dimensions:	AMU Approximately 156" W x 66" H x 100" L Overall

Air Replacement Ductwork Inclusions

AMU Duct Construction Design:	1 lot of rectangular AMU ductwork
AMU Duct Building Penetration:	Roof (Building Flange Included)
Intake Duct Includes: (1 lot) Straight Duct (1) 90° Vertical Elbow(s) (1) Vertical Intake Hood(s)	
Discharge Duct Includes: (1 lot) Straight Duct (1) 90° Vertical Elbow(s) (1) 3-Way Tee(s)	
<i>Note: Duct Supports not Provided in this Quotation (Roof Flanges & Additional Items not Included Unless Listed)</i>	

Equipment Access Design

Solid Back or Pass Through Equipment Flow:	Drive Through
Front Opening/Product Door Access:	Fabric Roll-up door
Front Opening/Product Door Size:	12' W x 12' H
Rear Opening/Product Door Access:	Fabric Roll-up door
Rear Opening/Product Door Size:	12' W x 12' H
Door Limit Switch(es):	4
Personnel Door Access Arrangement:	(2) 3' W x 7' H with 18" x 24" Observation Window

Electrical Controls Design

Equipment Electrical Controls Operation:	Insight
Equipment Pressure Control System:	Auto-balance
Safety Solenoid Valve Inclusion:	1/2" IND Style
Filter Monitoring Framework:	Manometer

Site Specifications (Required at Time of Order)

Roof Height and Site Exhaust Termination:	40' 0" Above Ground with a Termination 6 ft. Above the Roof
Building Roof Pitch:	Flat
Distance from Equipment to Wall:	Not Applicable to Design
Distance from AMU to Wall (Outdoor):	Not Applicable to Design
System Voltage on Site:	480V 3 PH 4 Wire
Gas Type and Pressure:	Natural Gas Fuel with 15" - 1# Pressure Available on Site

EQUIPMENT FEATURES

Large Equipment Paint Booths are designed for long-lasting performance. Constructed of high-quality materials for unrivaled structural integrity, they deliver a superior quality finish in the most efficient manner. The Large Equipment Booth line offers extensive pre-engineered models and options that are ETL and ETL-C listed and meet or exceed industry safety standards.

Side downdraft paint booths are an economical solution for shops that cannot install a pit. Clean air is introduced into the booth through a ceiling type intake plenum located at the top of the booth enclosure and is exhausted through filter chambers located on both sides of the enclosure that run along the depth of the booth. Air is pulled vertically downward from the ceiling of the booth to the floor. This booth is designed to give you the benefits of a downdraft booth without having the expense of putting in a floor pit. The intake and exhaust filter layout is designed for even air velocity throughout the working area of the booth (Consistent air velocity is an important factor in achieving a quality paint job). The intake plenum is designed with high efficiency intake filters to remove dust and dirt before it enters the paint booth. This will provide a cleaner environment for a quality paint job. By pressurizing the booth, you will achieve a cleaner paint job because the air entering the booth will be ducted directly from the intake air source (Heated AMU or Intake Fan) into the booth intake plenum, bypassing potentially contaminated shop air. The booth is designed with the maximized filter quantity to assure efficient particulate filtration from the intake and exhaust filters.

Construction

Booth panels are pre-punched, and companion flanged for easy assembly.

Booth support structure consists of structural steel with trouble-free bolt together assembly.

Note: This equipment is designed expressly for the removal of particulate matter only. Reduction of "volatile organic compounds" requires either coating reformulation or optional, additional equipment.

Tube Axial Fan

Tube axial fans feature continuously welded housing for an airtight seal. Non-sparking cast aluminum propellers provide consistent air velocity at higher static pressures. Universal motor plates allow for adjustable belt tensioning. The belt guard provides protection from the rotating pulley, per OSHA requirements. Motors feature a heavy-gauge steel frame, double-sealed ball bearings that are mechanically locked on the shaft end, and a bolt on the motor base for easy removal.

T8 LED Light Fixtures

Glass-free, ETL listed T8 LED lamps emit virtually no ultraviolet or infrared light, and they don't contain mercury, allowing for non-hazardous waste disposal. They turn on instantly at full luminosity, with no flicker or buzz. T8 LED lamps offer up to 40 percent energy savings when compared to traditional fluorescent 32-watt T8 systems. They also last longer than traditional fluorescent bulbs, providing up to a 50,000-hour life span.

RollSeal™ Automated Door Systems

RollSeal Automated Doors use a triple-layered fabric and airtight seal to prevent overspray from escaping the booth and keep contaminants out of paint jobs. They operate at the press of a button, and the controller allows you to set the door's speed as it rolls up and down, ensuring smooth starts and stops. With RollSeal Doors, air between layers helps maintain desired heat levels inside the booth, meeting cure temperature requirements. Plus, with fewer moving parts than traditional roll-up doors, less time and money is spent replacing rollers, tracks, panels and hinges. RollSeal's fabric doors are impact-resistant; however, if they are punctured or damaged, they can be easily repaired or replaced at a fraction of the cost of a metal roll-up door.

Personnel Door

3-by-7-foot personnel access doors are constructed of formed sheet steel. The door can be located on either side of the booth, and it can be installed for a right- or left-hand swing. Observation windows are also available to allow visibility.

GFS Wave® Paint Booth Filters

The most versatile single-stage filter media made for paint booths, GFS Wave accommodates all coatings and a variety of spray applications, from clear coats to high solids. GFS Wave has a 99.94 percent removal efficiency, with a holding capacity of 4.4 pounds. It meets NESHAP requirements. The material also complies with NFPA 33, OSHA and UL 900.

20" x 20" x 2" Polyester Exhaust filters and 1 set of wire grids & tips **(1 set)**

Intake Chamber

Intake chamber with 20" x 20" x 2" filter cells

20" x 20" x 1" Tackified Intake filters with internal wire grids **(1 set)**

INSIGHT Control Panel - Booth

The PLC-based INSIGHT control system continuously monitors all systems for safety and function. The simplistic setup and operating screens, along with built-in help screens, provide the operator with the status of the equipment. The remote operator station comes with a cable assembly for fast, easy wiring between the operator and the control panel. The INSIGHT control panel comes standard with the following components.

- **Type 12** industrial panel with main disconnect, and door mounted disconnect handle.
- Motor starters or variable frequency drives (VFD's) with branch circuit, and overload protection per NEC Article 430
- Control Transformer with primary/secondary fusing.
- Lighting branch circuits and contactor.
- Control power supply 120vac/24vdc
- Air Flow Switches and interlocks.
- Terminal Strip and Wire Gutters for easy connection of field wiring
- Programmable Logic Controller (PLC)
- Operator Interface Screen (HMI) Standard 5.7" Monochrome.
- Complete control panel is UL 508A listed.

The major feature of the **INSIGHT** control panel is the PLC based control and a touch screen. The control system continuously monitors all systems for safety, and function. The simplistic setup and operating screens, along with built in help screens provide the operator the current process of the oven. Pop up displays will display running information and faults. The **INSIGHT** assures that the ventilation system operates safely in a Spray mode with required interlocks required by NFPA 33 National Standard for Spray Application Using Flammable or Combustible Materials. The **INSIGHT** also assures that the ventilation system operates safely in a Cure mode with the interlocks and purging required by NFPA 86 National Standard for Ovens and Furnaces.

Standard Features of **INSIGHT** are:

- Easy pop-up screens for setting temperatures, and batch cycle times.
- Digital display of Set Point Temperature, and Current process temperature
- Digital display of Batch Set Time, and Time Remaining.
- Intuitive pop-up screens of current changing operations, and faults.

Auto-BalanceSystem

The auto-balance system keeps a paint booth balanced when it is in operation. The system monitors interior booth pressure and adjusts the exhaust fan's RPMs to meet the need of the volume of exhaust air based on the amount of intake air. Booths with an auto-balance system stay in balance as filters load with paint overspray. This increases useful filter life, provides consistent airflow throughout the booth and controls booth pressure.

Forced Dry Paint Curing System with Variable Air Volume

The Air Make-Up Unit (AMU) in a forced dry paint curing system is designed with a two-speed motor and damper package to discharge air at 160 degrees Fahrenheit for the accelerated curing cycle. The design reduces airflow

by 50 percent during cure mode. The system always uses outside air during cure mode to ensure clean air for the cure cycle. It also includes an auto-balance system with a variable frequency drive (VFD) to automatically adjust the airflow of the exhaust fan to ensure proper booth balance, not only during cure mode but during spray mode.

Air Replacement System

Indoor Booth Mounted Air Make-up Unit to replace the exhaust air from the paint spray booth. Air Make-up Unit features 100% fuel efficiency for reduced energy consumption.

Air Replacement Ductwork *Designed to have proper termination height above the roof line*

Ductwork is constructed from 18-gauge galvanized flanged, rectangular sections and designed for bolt together assembly.

NOTE: Duct supports not provided in this quotation.

Exhaust Ductwork *Designed to have proper termination height above the roof line*

Ductwork is constructed from 20-gauge galvanized spiral sections with connection rings for easy, bolt together assembly.

NOTE: Duct supports not provided in this quotation.

Manometer

The manometer measures differential pressure, indicating when paint arrestors or air intake filters are sufficiently loaded and need replacement. Manometers are included with all GFS paint booths and exhaust chambers.

Solenoid Valve

To prevent the working area of the equipment from reaching combustible levels, the three-way air safety valve interlocks the compressed air supplying the application equipment with the ventilation system and prevents spraying operations when exhaust fans are off. This safety feature is in accordance with NFPA 33 requirements. Additionally, any listed light fixtures included with this equipment provide a light lens switch that will shut down operation when the lens is not in the closed position. This is required to help prevent the possibility of the electrical componentry of the light from being exposed to a combustible level of overspray. Compressed air between the valve and the spray equipment is vented out when the valve is closed to assist in preventing damage to the equipment when the safety valve is triggered.

Door Limit Switches

Limit switches shut down painting when equipment doors are opened (time delay is standard on personnel access doors). Time delay relay allows access to the booth without stopping operations. The standard limit switch is Class I, Division 2 listed. Door limit switches are required when an Auto-Balance System is included in the design.

Assembly Hardware

Necessary assembly hardware provided, including all required bolts, nuts and caulking for a complete mechanical assembly. Anchor bolts are not provided, unless specified. For easy assembly, exploded-view installation drawings are also included.

OPTION 2:

GFS Equipment Type

Equipment Type:	Large Equipment Side-Downdraft Pressurized Booth
Internal Clear Working Dimensions:	16' 0" W x 14' 0" H x 70' 0" L
Overall Dimensions (Approximate):	24' 6" W x 17' 8" H x 71' 4" L
Zone 1 Working Dimensions (Split Cabin):	16' 0" W x 14' 0" H x 35' 0" L
Zone 2 Working Dimensions (Split Cabin):	16' 0" W x 14' 0" H x 35' 0" L
<i>Note: Approximate Overall Dimensions DO NOT Account for External Components (Fans, Remote Modules, AMUs, Ductwork, etc.)</i>	

Equipment Base Design

Equipment Panel Construction Type:	Single Skin
Equipment Panel Construction Finish:	G90 Galvanized Steel
Equipment Panel Construction Material:	18 Gauge Thickness
Support Structure Construction Type:	I-Beam Structural Steel
Airflow Design:	Side Downdraft
Target Average Air Velocity (FPM):	50 FPM
Light Quantity:	48 Lights
Light Type:	LED T8 Inside Access 4-Tube Lights

Exhaust Design

Total Design Exhaust CFM:	56000 Design CFM (14000 CFM per Fan)
Exhaust Method Design:	Sidewall Exhaust Chamber
Exhaust Fan Framework:	(4) 36" Tube Axial Fan with 5 HP TEFC Motor at 3/4" SP Aerovent
Exhaust Filter Selection:	20x20x2 GFS Wave (Panel)

Exhaust Ductwork Inclusions

Exhaust Duct Building Penetration:	Roof
Exhaust Duct Construction Design:	1 Lot of Spiral Exhaust Ductwork (36" Diameter)
Includes: (4) Inspection Door(s); (1 lot) Connection Rings; (4) ARV(s); (4) Roof Flange(s)	
<i>Note: Duct Supports not Provided in this Quotation (Roof Flanges & Additional Items not Included Unless Listed)</i>	

Intake Design

Total Design Supply CFM:	56000 Design CFM (28000 CFM per AMU)
Intake Method Design:	Ceiling Plenum
Intake Filter Selection:	20x20x1 Tacky Intake Filters (Panel)
Equipment Pressurization Provided Through:	AMU
Air Make-up Unit Configuration:	Horizontal Indoor (Booth Mounted) Down Discharge
Air make-up Unit MBTU/Discharge Temperature:	3 MBTU (millions of BTUs) Designed for 160°F Discharge Temp
Air Make-up Unit Stand:	Booth Mounted
Air Make-up Unit Weight/Fuel Connection:	3,100 lbs (approximate) with 1-1/4" Fuel Connection Size
Air Make-up Unit Performance Operation:	Variable Air Volume (VAV)
Air Make-up Unit Variable Air Volume Design:	Paint Curing (VFD Supplied by GFS)
Air Make-up Unit Mechanical Information:	28000 CFM with 20 HP motor at 1/2" SP
Air make-up Unit Heating System:	Direct Fired Natural Gas
Air Make-up Unit Stage 1 Intake Filter:	MERV 8 (Standard)

Air Replacement Ductwork Inclusions

AMU Duct Construction Design:	Rectangular (Including 1 Lot of Straight Duct)
AMU Duct Building Penetration:	Roof
Intake Duct Includes: (2) 90° Vertical Elbow(s); (1 Lot) Straight Duct; (2) Vertical Intake Hood(s); (2) Roof Flange(s)	
Discharge Duct Includes: 1 Lot of Straight Duct	
<i>Note: Duct Supports not Provided in this Quotation (Roof Flanges & Additional Items not Included Unless Listed)</i>	

Equipment Access Design

Solid Back or Passthrough Equipment Flow:	Drive Through
Front Opening/Product Door Access:	Fabric Rollup Door
Front Opening/Product Door Size:	12' 0" W x 12' 0" H
Rear Opening/Product Door Access:	Fabric Rollup Door
Rear Opening/Product Door Size:	12' 0" W x 12' 0" H
Supplemental Opening/Product Door Access:	Fabric Rollup Door
Supplemental Opening/Product Door Size:	12' 0" W x 14' 0" H
Supplemental Opening/Product Door Layout Location:	Center Divider
Door Limit Switches:	Included
Personnel Door Access Arrangement:	(2) 3' W x 7' H Door(s) with 18" x 24" Observation Window
Working Depth Division Design:	Split Cabin

Electrical Controls Design

Equipment Electrical Controls Operation:	Insight (Siemens)
Equipment Pressure Control System:	(2) Auto Balances
Safety Solenoid Valve Inclusion:	1/2" Industrial Style
Filter Monitoring Framework:	Manometer

Site Specifications (Required at Time of Order)

Roof Height and Site Exhaust Termination:	40' 0" Above Ground with a Termination 6 ft. Above the Roof
Building Roof Pitch:	Flat
Distance from Equipment to Wall:	Not Applicable to Design
Distance from AMU to Wall (Outdoor):	Not Applicable to Design
System Voltage on Site:	480V 3 PH 4 Wire
Gas Type and Pressure:	Natural Gas Fuel with 15"- 1# Pressure Available on Site
Installation Site Location:	Verification Required

EQUIPMENT FEATURES

Large Equipment Paint Booths are designed for long-lasting performance. Constructed of high-quality materials for unrivaled structural integrity, they deliver a superior quality finish in the most efficient manner. The Large Equipment Booth line offers extensive pre-engineered models and options that are ETL and ETL-C listed and meet or exceed industry safety standards.

Side downdraft paint booths are an economical solution for shops that cannot install a pit. Clean air is introduced into the booth through a ceiling type intake plenum located at the top of the booth enclosure and is exhausted

through filter chambers located on both sides of the enclosure that run along the depth of the booth. Air is pulled vertically downward from the ceiling of the booth to the floor. This booth is designed to give you the benefits of a downdraft booth without having the expense of putting in a floor pit. The intake and exhaust filter layout is designed for even air velocity throughout the working area of the booth (Consistent air velocity is an important factor in achieving a quality paint job). The intake plenum is designed with high efficiency intake filters to remove dust and dirt before it enters the paint booth. This will provide a cleaner environment for a quality paint job. By pressurizing the booth, you will achieve a cleaner paint job because the air entering the booth will be ducted directly from the intake air source (Heated AMU or Intake Fan) into the booth intake plenum, bypassing potentially contaminated shop air. The booth is designed with the maximized filter quantity to assure efficient particulate filtration from the intake and exhaust filters.

Construction

Booth panels are pre-punched, and companion flanged for easy assembly.

Booth support structure consists of structural steel with trouble-free bolt together assembly.

Note: This equipment is designed expressly for the removal of particulate matter only. Reduction of "volatile organic compounds" requires either coating reformulation or optional, additional equipment.

Tube Axial Fan

Tube axial fans feature continuously welded housing for an airtight seal. Non-sparking cast aluminum propellers provide consistent air velocity at higher static pressures. Universal motor plates allow for adjustable belt tensioning. The belt guard provides protection from the rotating pulley, per OSHA requirements. Motors feature a heavy-gauge steel frame, double-sealed ball bearings that are mechanically locked on the shaft end, and a bolt on the motor base for easy removal.

T8 LED Light Fixtures

Glass-free, ETL listed T8 LED lamps emit virtually no ultraviolet or infrared light, and they don't contain mercury, allowing for non-hazardous waste disposal. They turn on instantly at full luminosity, with no flicker or buzz. T8 LED lamps offer up to 40 percent energy savings when compared to traditional fluorescent 32-watt T8 systems. They also last longer than traditional fluorescent bulbs, providing up to a 50,000-hour life span.

RollSeal™ Automated Door Systems

RollSeal Automated Doors use a triple-layered fabric and airtight seal to prevent overspray from escaping the booth and keep contaminants out of paint jobs. They operate at the press of a button, and the controller allows you to set the door's speed as it rolls up and down, ensuring smooth starts and stops. With RollSeal Doors, air between layers helps maintain desired heat levels inside the booth, meeting cure temperature requirements. Plus, with fewer moving parts than traditional roll-up doors, less time and money is spent replacing rollers, tracks, panels and hinges. RollSeal's fabric doors are impact-resistant; however, if they are punctured or damaged, they can be easily repaired or replaced at a fraction of the cost of a metal roll-up door.

Personnel Door

3-by-7-foot personnel access doors are constructed of formed sheet steel. The door can be located on either side of the booth, and it can be installed for a right- or left-hand swing. Observation windows are also available to allow visibility.

GFS Wave® Paint Booth Filters

The most versatile single-stage filter media made for paint booths, GFS Wave accommodates all coatings and a variety of spray applications, from clear coats to high solids. GFS Wave has a 99.94 percent removal efficiency, with a holding capacity of 4.4 pounds. It meets NESHAP requirements. The material also complies with NFPA 33, OSHA and UL 900.

20" x 20" x 2" Polyester Exhaust filters and 1 set of wire grids & tips **(1 set)**

Intake Chamber

Intake chamber with 20" x 20" x 2" filter cells

20" x 20" x 1" Tackified Intake filters with internal wire grids (**1 set**)

INSIGHT Control Panel - Booth

The PLC-based INSIGHT control system continuously monitors all systems for safety and function. The simplistic setup and operating screens, along with built-in help screens, provide the operator with the status of the equipment. The remote operator station comes with a cable assembly for fast, easy wiring between the operator and the control panel. The INSIGHT control panel comes standard with the following components.

- **Type 12** industrial panel with main disconnect, and door mounted disconnect handle.
- Motor starters or variable frequency drives (VFD's) with branch circuit, and overload protection per NEC Article 430
- Control Transformer with primary/secondary fusing.
- Lighting branch circuits and contactor.
- Control power supply 120vac/24vdc
- Air Flow Switches and interlocks.
- Terminal Strip and Wire Gutters for easy connection of field wiring
- Programmable Logic Controller (PLC)
- Operator Interface Screen (HMI) Standard 5.7" Monochrome.
- Complete control panel is UL 508A listed.

The major feature of the **INSIGHT** control panel is the PLC based control and a touch screen. The control system continuously monitors all systems for safety, and function. The simplistic setup and operating screens, along with built in help screens provide the operator the current process of the oven. Pop up displays will display running information and faults. The **INSIGHT** assures that the ventilation system operates safely in a Spray mode with required interlocks required by NFPA 33 National Standard for Spray Application Using Flammable or Combustible Materials. The **INSIGHT** also assures that the ventilation system operates safely in a Cure mode with the interlocks and purging required by NFPA 86 National Standard for Ovens and Furnaces.

Standard Features of **INSIGHT** are:

- Easy pop-up screens for setting temperatures, and batch cycle times.
- Digital display of Set Point Temperature, and Current process temperature
- Digital display of Batch Set Time, and Time Remaining.
- Intuitive pop-up screens of current changing operations, and faults.

Auto-Balance System

The auto-balance system keeps a paint booth balanced when it is in operation. The system monitors interior booth pressure and adjusts the exhaust fan's RPMs to meet the need of the volume of exhaust air based on the amount of intake air. Booths with an auto-balance system stay in balance as filters load with paint overspray. This increases useful filter life, provides consistent airflow throughout the booth and controls booth pressure.

Forced Dry Paint Curing System with Variable Air Volume

The Air Make-Up Unit (AMU) in a forced dry paint curing system is designed with a two-speed motor and damper package to discharge air at 160 degrees Fahrenheit for the accelerated curing cycle. The design reduces airflow by 50 percent during cure mode. The system always uses outside air during cure mode to ensure clean air for the cure cycle. It also includes an auto-balance system with a variable frequency drive (VFD) to automatically adjust the airflow of the exhaust fan to ensure proper booth balance, not only during cure mode but during spray mode.

Air Replacement System

Indoor Booth Mounted Air Make-up Unit to replace the exhaust air from the paint spray booth. Air Make-up Unit features 100% fuel efficiency for reduced energy consumption.

Air Replacement Ductwork *Designed to have proper termination height above the roof line*

Ductwork is constructed from 18-gauge galvanized flanged, rectangular sections and designed for bolt together assembly.

NOTE: Duct supports not provided in this quotation.

Exhaust Ductwork *Designed to have proper termination height above the roof line*

Ductwork is constructed from 20-gauge galvanized spiral sections with connection rings for easy, bolt together assembly.

NOTE: Duct supports not provided in this quotation.

Manometer

The manometer measures differential pressure, indicating when paint arrestors or air intake filters are sufficiently loaded and need replacement. Manometers are included with all GFS paint booths and exhaust chambers.

Solenoid Valve

To prevent the working area of the equipment from reaching combustible levels, the three-way air safety valve interlocks the compressed air supplying the application equipment with the ventilation system and prevents spraying operations when exhaust fans are off. This safety feature is in accordance with NFPA 33 requirements. Additionally, any listed light fixtures included with this equipment provide a light lens switch that will shut down operation when the lens is not in the closed position. This is required to help prevent the possibility of the electrical componentry of the light from being exposed to a combustible level of overspray. Compressed air between the valve and the spray equipment is vented out when the valve is closed to assist in preventing damage to the equipment when the safety valve is triggered.

Door Limit Switches

Limit switches shut down painting when equipment doors are opened (time delay is standard on personnel access doors). Time delay relay allows access to the booth without stopping operations. The standard limit switch is Class I, Division 2 listed. Door limit switches are required when an Auto-Balance System is included in the design.

Assembly Hardware

Necessary assembly hardware provided, including all required bolts, nuts and caulking for a complete mechanical assembly. Anchor bolts are not provided, unless specified. For easy assembly, exploded-view installation drawings are also included.