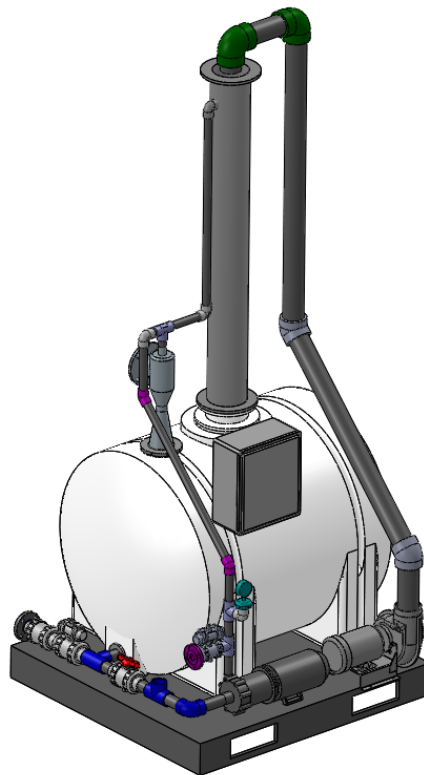


PolyScrub-0120

Portable Fume Scrubber
120 CFM



Author	Revision Description	Date	Revision
P VAUGHN	Initial Release	30 OCT 21	0



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1.0 Scope

Detailed performance characteristics, dimensional data, and system components for PolyScrubbb, portable scrubber

2.0 Applicable Standards

- ASME B 31.3 Pressure Containing Process Piping
- ASME B 16.5 Pipe Flange and fittings dimensions
- AISC 325 American Institute of Steel Construction
- ASTM A193 Standard Specification Bolting for Pressure Vessels
- ASCE 7-05 Minimum Design Loads for buildings and other Structures
- PIPE STE03350 Vertical Vessel Foundation Design Guide
- N/A Air Pollution Control Equipment Louis Theodore
- N/A Environmental Engineering, Butterworth Heinemann



3.0 System Components

3.1 Well

- High Density Polyethylene (Translucent) as shown
- Rating 1.4 SG

3.2 Column

- Polypropylene Construction
- Vacuum Rating 5 PSI

3.3 Venturi

- Static Pressure @ 120 CFM 2.1" W.C.
- Static Pressure @ 0 CFM 3.5" W.C.
- Polypropylene Construction

3.4 Skid

- High Density Polyethylene Construction as shown.
- Designed to ABS loading conditions
- Integrated with well.

3.5 Control Valves (optional)

- Pneumatic air to open

3.6 Circulation Pump

- 3 HP Centrifugal pump (polypropylene)
- TEFC

3.7 Blower

- 24 V
- 250 CFM @ 0" W.C.

3.8 Process piping

- Heat Fused Polypropylene



3.9 Column Internals

- Packing support tray
 - o Convoluted Style or grid style
 - o 2/4 part construction
 - o Design Load 15 lbs
- Bed Limiter
 - o N/A
- Mist Eliminator
 - o 1-piece construction
 - o 2" thick
 - o $\Delta P @ 120 \text{ CFM} \leq .25 \text{ in W.C.}$
 - o Polypropylene
- Liquid Distributor
 - o Spray nozzle (PTFE)
 - o 150 deg full Cone spray pattern

3.10 Packing

- 5/8" Nominal Random packing
- Polypropylene
- Estimated Volume 1700 in³

3.11 Instrumentation

Included with purchase of item

- Conductivity meter
- pH probe
- Flowmeter
- Pump discharge pressure gauge 0-60psi
- Magnehelic gauge
 - o Appropriate Transmitters to be provided where applicable

3.12 Electrical Enclosure

- Nema 4 Enclosure
- See Section 5 for control theory

3.13 Fasteners

- All Fasteners B7 PTFE Coated or 304 SS per ASTM A193/194

3.14 Gaskets

- Low torque sealing PTFE

3.15 Chiller

- Not included

3.16 Sight Glass

- N/A Translucent well



4.0 Dimensional and Functional Overview

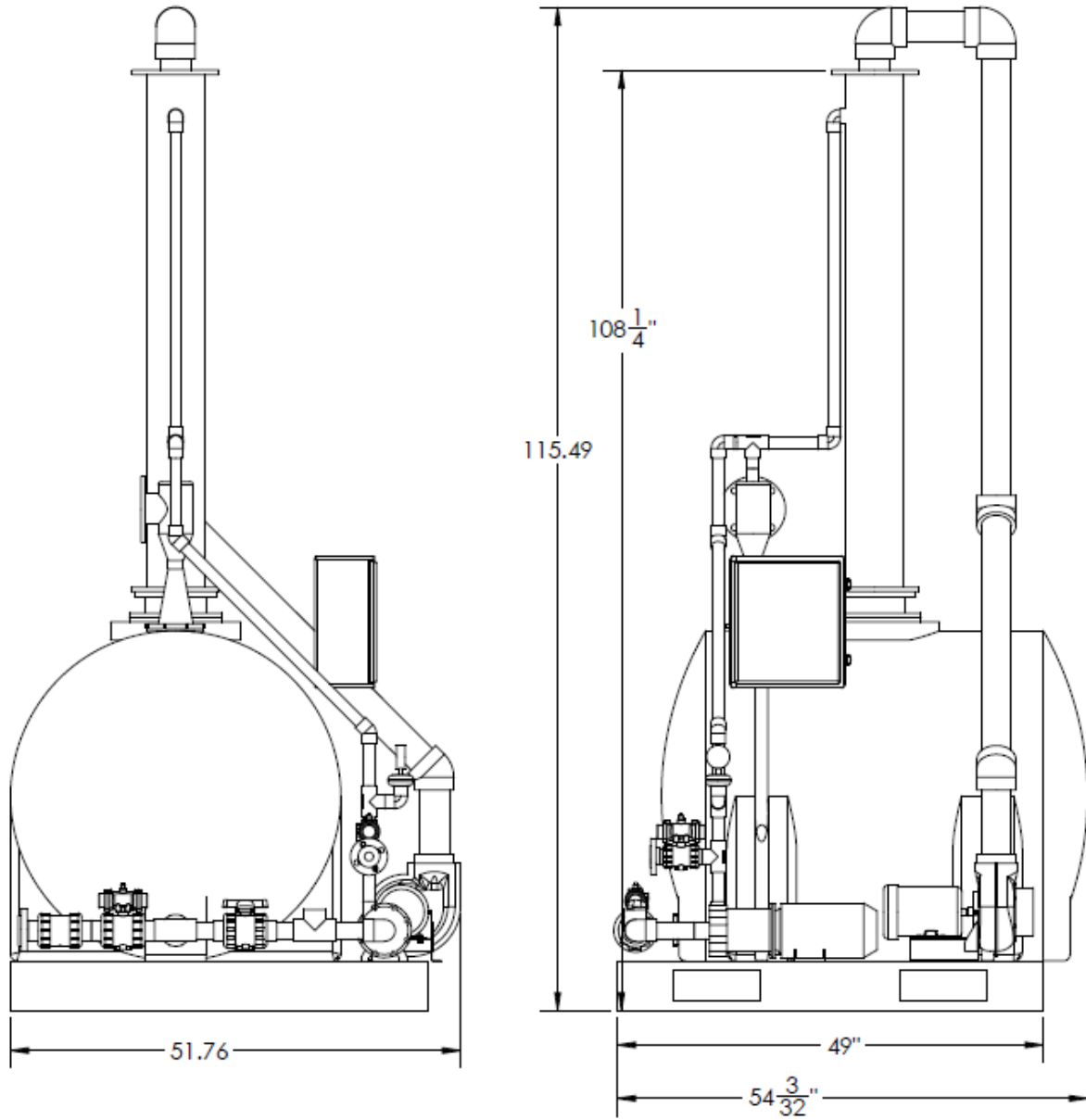


Figure 1: Dimensional Overview

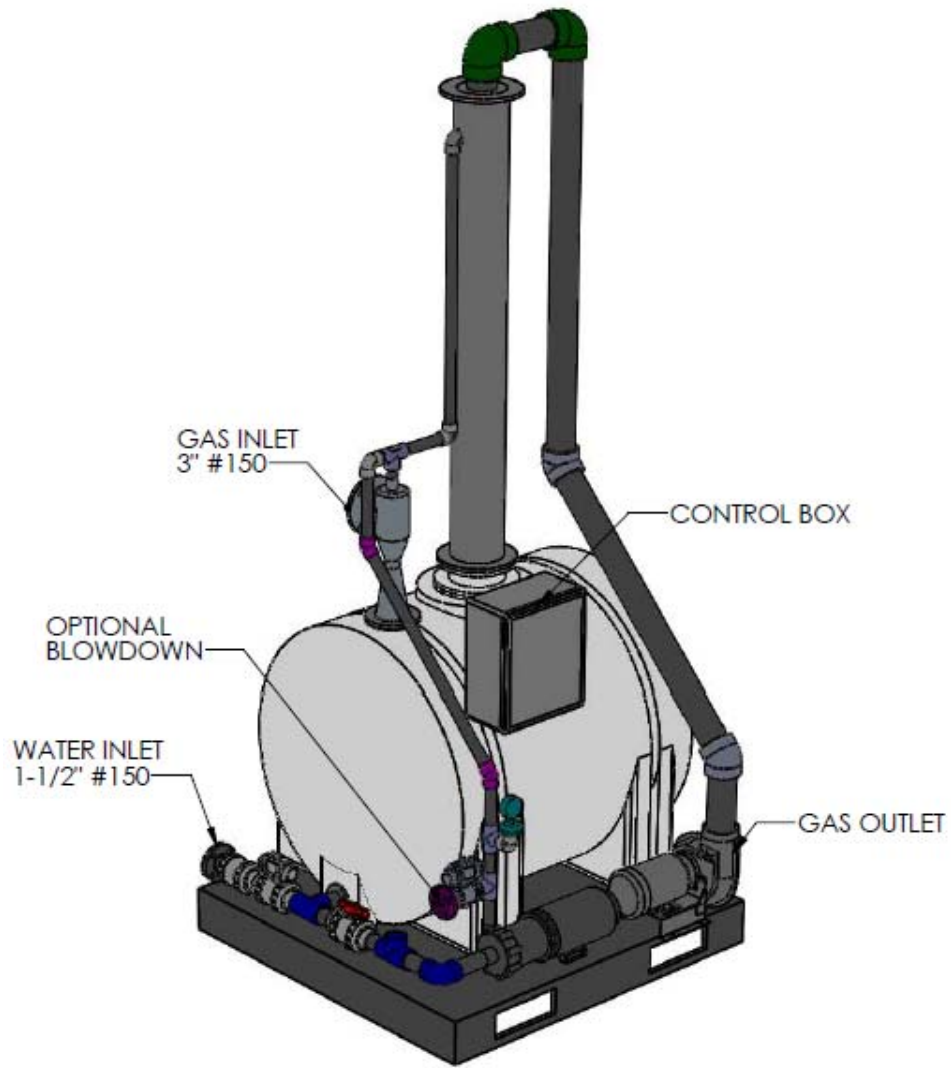


Figure 2: Functional Overview



5.0 Operating Parameters (Minimum)

Control type	Start/Stop – Full Automation Adder
Capacity of Scrubber	120 CFM @ 75-90% Flooding
Design Type	Modular Batch Style
Inlet Humidity	Fully Saturated
Design Pressure	1 psi
Design Vacuum	30" W.C.
Column Pressure Drop @ 120 CFM	3" W.C.
Well Size (operating)	170 gallons
Scrubbing solution	3-5% NaOH
Max Temperature	185° F
Operating Temperature	80° F
Target Removal	> 99.9%
Specified Removal	As follows

Gas	Calculated Removal (%)
HCl	99.9
Cl₂	99.5
NH₃	99.9
SO₂	99.9
H₂S	99.0
H₂SO₄	99.9

6.0 Control Theory (see Automation Adder)

	Low pH	High Conductivity	High Level	Low Level	Low Flow
Water inlet Valve				OPEN	OPEN
Caustic inlet Valve	OPEN				
Well Drain Valve		OPEN	OPEN	CLOSE	
Alarm				ON	ON



7.0 Recommended Spare Parts

Part	UoM	Qty suggested
Mist Eliminator pad	Ea	1
Circ Pump	Ea	1
Conductivity probe	Ea	1
pH probe	Ea	1
Spare nozzle	Ea	1
Pressure Gauge	Ea	1

8.0 Included Documentation

- Assembly drawings
- Dimensional drawings for reference of all fabricated components
- System piping and instrumentation diagram
- Maintenance and Operations manual
- System integration testing
- Spare parts list
- CAD files (.STP format)

9.0 Delivery and Payment Schedule

35% Initial Payment

- Due with order

65% final payment

- Net 30 days after shipment

10.0 Appendix