FINAL REPORT

DEPOR INDUSTRIES

SHELBY TOWNSHIP, MICHIGAN

DESTRUCTION EFFICIENCY AND CAPTURE EFFICIENCY

RWDI #2404158

June 3, 2024

SUBMITTED TO

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EXECUTIVE SUMMARY

RWDI USA LLC (RWDI) was retained by Depor Industries (Depor) to complete an emissions sampling program at their facility located at 14380 23 Mile Road in Shelby Township. The test program was conducted to fulfill the remaining requirements of the Michigan Department of Environment, Great Lakes, and Energy (EGLE) Permit to Install (PTI) 43-99H. The testing consisted of total hydrocarbons (THC), Methane, and non-methane organic compounds (NMOC) emission rates at the following sources:

- Destruction Efficiency from FGVOCS:
  - 1 Oxidizer inlet – 3 hours per test
  - 1 Oxidizer outlet – 3 hours per test
- Capture Efficiency:
  - 1 Building Roof Vent – 30 minutes per hour per 3-hour test
  - 4 Cooling Exhausts - 30 minutes per hour per 3-hour test
  - 1 Acid Tank Exhaust - 30 minutes per hour per 3-hour test
  - 1 Oxidizer inlet (captured with the destruction efficiency testing)

Testing was successfully completed over April 17th and 18th, 2024.

Executive Table i: Results Summary – Destruction Efficiency (RTO)

Parameter	Emission Data (ppmv, lb/hr & % Destruction)			
	Test 1	Test 2	Test 3	Average
RTO Inlet (THC)	148.0 ppmv 20.8 lb/hr	163.1 ppmv 24.0 lb/hr	149.4 ppmv 22.4 lb/hr	153.5 ppmv 22.4 lb/hr
RTO Outlet (THC)	1.23 ppmv 0.21 lb/hr	2.01 ppmv 0.32 lb/hr	1.93 ppmv 0.31 lb/hr	1.72 ppmv 0.28 lb/hr
Destruction Efficiency (THC)	99.0 %	98.7 %	98.6 %	98.8 %

Note: All emission data is based on a volumetric flow rate expressed as cfm

Executive Table ii: Results Summary – Capture Efficiency Testing

Parameter	Emission Data (ppmv, lb/hr & % Capture)			
	Test 1	Test 2	Test 3	Average
RTO Inlet (THC)	148.0 ppmv 20.8 lb/hr	163.1 ppmv 24.0 lb/hr	149.4 ppmv 22.4 lb/hr	153.5 ppmv 22.4 lb/hr
Coating Exhaust Stacks (THC) (4 Locations)	3.31 ppmv 0.34 lb/hr	4.20 ppmv 0.44 lb/hr	3.91 ppmv 0.41 lb/hr	5.22 ppmv 0.55 lb/hr
Building Exhaust Vent (THC) (1 Location)	23.02 ppmv 0.76 lb/hr	21.76 ppmv 0.82 lb/hr	22.55 ppmv 1.07 lb/hr	22.8 ppmv 0.90 lb/hr
Acid Dip Tank Exhaust (THC) (1 Location)	20.34 ppmv 2.82 lb/hr	17.73 ppmv 2.56 lb/hr	18.52 ppmv 2.59 lb/hr	19.6 ppmv 2.66 lb/hr
Capture Efficiency (THC)	84.2 %	86.3 %	84.6 %	85.0 %

Note: All emission data is based on a volumetric flow rate expressed as cfm

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1 INTRODUCTION

RWDI USA LLC (RWDI) was retained by Depor Industries (Depor) to complete an emissions sampling program at their facility located at 14380 23 Mile Road in Shelby Township. The test program was conducted to fulfill the remaining requirements of the Michigan Department of Environment, Great Lakes, and Energy (EGLE) Permit to Install (PTI) 43-99H. The testing consisted of total hydrocarbons (THC), Methane, and non-methane organic compounds (NMOC) emission rates at the following sources:

- Destruction Efficiency from FGVOCS
  - 1 Oxidizer inlet – 3 hours per test
  - 1 Oxidizer outlet – 3 hours per test
- Capture Efficiency
  - 1 Building Roof Vent – 30 minutes per hour per 3-hour test
  - 4 Coating Exhausts - 30 minutes per hour per 3-hour test
  - 1 Acid Tank Exhaust - 30 minutes per hour per 3-hour test
  - 1 Oxidizer inlet (captured with the destruction efficiency testing)

Testing was successfully completed over April 17th and 18th, 2024.

1.1 Testing Personnel

Table 1.1.1: Summary of Testing Personnel

Name	Title & Affiliation	Address	Contact Number
Mr. Andrew Riley	Environmental Quality Analyst EGLE	Constitution Hall 2nd Floor, South 525 West Allegan Street Lansing, Michigan 48909	586.565.7379
Mr. Brad Bergeron	Technical Director RWDI USA LLC	2239 Star Court Rochester Hills, MI 48309	248.234.3885
Mr. Steve Smith	Project Manager RWDI USA LLC		734.751.9701
Mr. Mason Sakshaug	Supervisor, USA Source RWDI USA LLC		989.323.0355
Mr. Mike Nummer	Senior Field Technician RWDI USA LLC		
Mr. David Trahan	Senior Field Technician RWDI USA LLC		
Mr. Ben Durham	Senior Field Technician RWDI USA LLC		
Mr. Cade Smith	Field Technician RWDI USA LLC		248.841.8442
Ms. Kate Strang	Field Technician RWDI USA LLC		
Mr. Shane Rabideau	Field Technician RWDI USA LLC		
Mr. Roy Zimmer	Field Technician RWDI USA LLC		

2 SOURCE AND SAMPLING LOCATIONS

2.1 Process Description

Depor manufactures metal and plastic automotive parts, with coating operations controlled by a regenerative thermal oxidizer. The coating lines each have a parts coating area that utilizes a dip/spin system to coat small metal parts. Each dip/spin line operates independently from the other coating lines at the facility. Known quantities of parts are loaded into a basket. The basket is held as the dip tank or vat is raised such that the parts are fully submerged in the coating material. The vat is then partially lowered so the parts are no longer submerged but remain in the vat. The basket is then spun to remove excess coating material from the parts. The excess coating material that is spun form the parts remains in the vat and reused. The parts are then placed onto a conveyor that transfers them into a curing oven.

2.2 Control Equipment

Exhaust hoods independently capture emissions from the coating lines and direct them to a main exhaust header, which leads to the RTO. The RTO operates at a temperature of 1550 °F with a retention time of 0.5 seconds. The minimum rated destruction efficiency is 95 percent on a mass basis. The building will be used as a total enclosure for the capture efficiency testing. The roof exhaust, coating exhausts, and acid dip tank exhaust were all in operation during each test.

2.3 Operating Parameters

The following process information was recorded during testing:

- Production Rate
- RTO Temperature

Detailed process information can be found in **Appendix A**.

2.4 Process Sampling Locations

This following table summarizes the sampling locations. Detailed stack information can be found in **Appendix C**.

Table 2.4.1: Summary of Stack Characteristics

Source	Parameter	Diameter	Approximate Duct Diameters from Flow Disturbance	Number of Ports	Flow Points per Traverse	Total Points per Test	Average Stack Temperature
RTO Outlet	THC / Flow	36"x78"	3.4 downstream >2 upstream	5	4	20	280°F
RTO Inlet	THC / Flow	48"	1.75 downstream 0.75 upstream	2	8	16	188°F
Coating Exhaust 1&2	THC / Flow	40"	4.5 downstream 1.2 upstream	2	8	16	CE1: 100°F CE2: 87°F
Coating Exhaust 3&4	THC / Flow	36"	5 downstream 1.3 upstream	2	8	16	CE3: 88°F CE4: 108°F
Building Vent Exhaust	THC / Flow	54"x54"	2 downstream 0.66 upstream	4	4	16	91°F
Acid Dip Tank Exhaust	THC / Flow	37.5"	4.8 downstream 1.44 upstream	2	8	16	91°F

3 SAMPLING AND ANALYTICAL PROCEDURES

3.1 Description of Testing Methodologies

3.1.1 Stack Velocity, Temperature, and Volumetric Flow Rate Determination

The exhaust velocities and flow rates were determined following USEPA Method 2, "Determination of Stack Gas Velocity and Flow Rate (Type S Pitot Tube)". Velocity measurements were taken with a pre-calibrated S-Type pitot tube and incline or digital manometer. Volumetric flow rates were determined following the equal area method as outlined in US EPA Method 2. Temperature measurements were made simultaneously with the velocity measurements and were conducted using a chromel-alumel type "k" thermocouple in conjunction with a digital temperature indicator.

The dry molecular weight of the stack gas was determined following calculations outlined in US EPA Method 3, "Determination of Molecular Weight of Dry Stack Gas". Both Oxygen and Carbon Dioxide were measured using Fyrite chemical analysis. These values were used with stoichiometric calculations to determine molecular weight. One sample was collected over the entire duration of CEMS testing for the RTO Outlet and Inlet. Two Fyrite grab samples were taken per flow measurement for all other sources.

Stack moisture content was determined through direct condensation and according to US EPA Method 4, "Determination of Moisture Content of Stack Gas". Moisture was drawn from the stack at a single point into a series of impingers chilled in an ice bath. The moisture was then removed from the stack gas through the process of condensation and the water gain determined via gravimetric analysis. For sources under 200°F, the wet bulb/dry bulb procedure was used to calculate moisture per USEPA Method 4.

3.1.2 Sampling for Total Hydrocarbons (RTO Destruction Efficiency)

VOC Destruction Efficiency (DE) testing was performed simultaneously on the inlet and outlet of the Regenerative Thermal Oxidizer. The measurements were taken continuously following the USEPA Method 25A on the outlet (total hydrocarbon/methane analyzer) and on the inlet (total hydrocarbon/methane analyzer).

The DE compliance test consisted of three (3), 180-minute tests on the inlet and outlet of the RTO.

Regular performance checks on the CEM were carried out by zero and span calibration checks using USEPA Protocol calibration gases. These checks verified the ongoing precision of the monitor with time by introducing pollutant-free (zero) air followed by known calibration gas (span) into the monitor. The response of the monitor to pollutant-free air and the corresponding sensitivity to the span gases were reviewed frequently as an ongoing indication of analyzer performance.

Prior to testing, a 4-point analyzer calibration error check was conducted using USEPA protocol gases. The calibration error check was performed by introducing zero, low, mid and high-level calibration gases directly into the analyzer. The calibration error check was performed to confirm that the analyzer response is within ±5% of the certified calibration gas introduced. At the conclusion of each test run a system-bias check was performed to evaluate the percent drift from pre- and post-test system bias checks. The system bias checks were used to confirm that the analyzer did not drift greater than ±3% throughout a test run.

Zero and upscale calibration checks were conducted both before and after each test run to quantify measurement system calibration drift and sampling system bias. Upscale is either the mid- or high-range gas, whichever most closely approximates the flue gas level. During these checks, the calibration gases were introduced into the sampling system at the probe outlet so that the calibration gases were analyzed in the same manner as the flue gas samples.

A gas sample was continuously extracted from the stack and delivered to each gas analyzer, which measure the pollutant or diluent concentrations in the gas. The analyzers were calibrated on site using EPA Protocol No. 1 certified calibration mixtures. The end of the probe was connected to a heated Teflon sample line, which delivered the sample gases from the stack to the CEM system. The heated sample line maintained the sample gas temperature above 250°F to prevent condensation of stack gas moisture within the line.

3.1.3 Gas Dilution System

Calibration gas was mixed using an Environics 4040 Gas Dilution System. The mass flow controllers are factory calibrated using a primary flow standard traceable to the United States National Institute of Standards and Technology (NIST). Each flow controller utilizes an 11-point calibration table with linear interpolation, to increase accuracy and reduce flow controller nonlinearity. The calibration is done yearly, and the records are included in **Appendix E.** A multi-point EPA Method 205 check was executed in the field prior to testing to ensure accurate gas mixtures. The gas dilution system consists of calibrated orifices or mass flow controllers and dilutes a high-level calibration gas to within ±2% of predicted values. The gas divider is capable of diluting gases at set increments and was evaluated for accuracy in the field in accordance with US EPA Method 205 "*Verification of Gas Dilution Systems for Field Instrument Calibrations*". The gas divider dilutions were measured to evaluate that the responses are within ±2% of predicted values. In addition, a certified mid-level calibration gas within ±10% of one of the tested dilution gases was introduced into an analyzer to ensure the response of the gas calibration is within ±2% of gas divider dilution concentration.

3.1.4 Sampling for Capture Efficiency

Total Hydrocarbon (THC) testing was performed concurrently on the following sources servicing the system:

- One Building Vent Exhaust;
- Four Coating Exhausts;
- One Acid Dip Tank Exhaust;
- Inlet to RTO (capture in discussion of Destruction Efficiency)

For each source identified, RWDI measured THC using US EPA Method 25A. A total of three (3) 90-minute tests were completed for each source over 180-minute stretches, with the exception of the RTO inlet which consisted of three (3) 180 minute test periods. The collected data was used to determine the mass emissions of VOCs released from the uncontrolled zones.

The Depor structure operates as a non-fugitive building enclosure (a permanent total enclosure with uncontrolled atmospheric exhausts). Therefore, VOC capture efficiency across the four (4) coating lines were determined by a gas/gas capture efficiency protocol using the facility as a building enclosure. A total of five (5) flame ionization detectors (FID) instruments were used simultaneously to measure the THC concentration in the captured and uncaptured gas streams according to USEPA Method 25A as described in Section 3.1.2 of this test plan.

The total uncaptured VOC mass emission rate (sum of the six (6) uncaptured exhausts) was determined using USEPA Method 204E. Air velocity measurements were performed for each gas stream several times during each capture efficiency test period using a type S Pitot tube in accordance with USEPA Method 2.

A total of six (6) uncaptured building exhausts and one captured gas stream (RTO inlet) were measured to determine VOC capture efficiency. Three capture efficiency test periods were performed. Each of the six (6) uncaptured building exhausts will be monitored periodically throughout each capture efficiency test period. The VOC sample probe was switched from one exhaust to the next every 30 minutes, which resulted in 30 minutes of data collection for each exhaust during each hour of testing. The uncaptured VOC mass flowrate for each building exhaust was calculated using the equation and the procedures presented in Method 204E. VOC capture efficiency was determined by the ratio of the captured VOC mass flow to total measured VOC mass flow using the following equation:

$$\text{VOC CE \%} \quad \frac{\text{VOC Captured (lb/hr)}}{\text{(VOC Captured (lb/hr)) + VOC Uncaptured (lb/hr))}} \quad \text{x 100}$$

4 RESULTS

4.1 Discussion of Results

Results are summarized in **Tables 4.1.1** and **4.1.2** for the DE and CE. Detailed VOC numbers for the DE and CE are presented in **Appendix B**. Flowrate data can be found in **Appendix C.** All sampling field notes are provided in **Appendix D**. Sample Calculations are provided in **Appendix F**.

Table 4.1.1: Results Summary – Destruction Efficiency (RTO)

Parameter	Emission Data (ppmv, lb/hr & % Destruction)			
	Test 1	Test 2	Test 3	Average
RTO Inlet (THC)	148.0 ppmv 20.8 lb/hr	163.1 ppmv 24.0 lb/hr	149.4 ppmv 22.4 lb/hr	153.5 ppmv 22.4 lb/hr
RTO Outlet (THC)	1.23 ppmv 0.21 lb/hr	2.01 ppmv 0.32 lb/hr	1.93 ppmv 0.31 lb/hr	1.72 ppmv 0.28 lb/hr
Destruction Efficiency (THC)	99.0 %	98.7 %	98.6 %	98.8 %

Note: All emission data is based on a volumetric flow rate expressed as cfm

Table 4.1.2: Results Summary – Capture Efficiency Testing

Parameter	Emission Data (ppmv, lb/hr & % Capture)			
	Test 1	Test 2	Test 3	Average
RTO Inlet (THC)	148.0 ppmv 20.8 lb/hr	163.1 ppmv 24.0 lb/hr	149.4 ppmv 22.4 lb/hr	153.5 ppmv 22.4 lb/hr
Coating Exhaust Stacks (THC) (4 Locations)	3.31 ppmv 0.34 lb/hr	4.20 ppmv 0.44 lb/hr	3.91 ppmv 0.41 lb/hr	5.22 ppmv 0.55 lb/hr
Building Exhaust Vent (THC) (1 Location)	23.02 ppmv 0.76 lb/hr	21.76 ppmv 0.82 lb/hr	22.55 ppmv 1.07 lb/hr	22.8 ppmv 0.90 lb/hr
Acid Dip Tank Exhaust (THC) (1 Location)	20.34 ppmv 2.82 lb/hr	17.73 ppmv 2.56 lb/hr	18.52 ppmv 2.59 lb/hr	19.6 ppmv 2.66 lb/hr
Capture Efficiency (THC)	84.2 %	86.3 %	84.6 %	85.0 %

Note: All emission data is based on a volumetric flow rate expressed as cfm

5 PROCESS CONDITIONS

Operating conditions during the sampling were monitored by Depor personnel. All equipment was operated under normal operating conditions. Process Data is provided in **Appendix A**.

Contact was maintained between Depor and the sampling team. A member of the RWDI sampling team was in contact with Depor staff during the entire sampling program.

6 EGLE CORRESPONDENCE

The test plan and all EGLE correspondence is in **Appendix G.** Included in the correspondence is an email exchange with Jeremy Howe of EGLE to determine the validity of the Depor facility as a Temporary Total Enclosure. It was agreed that the facility met the requirements, and testing commenced as such. In addition, since the air supply and exhausts from the building are all mechanically provided and the building was operated with all doors closed, there were no Natural Draft Openings (NDOs) as per USEPA Method 204 to be included in the assessment.

7 CONCLUSIONS

Testing was successfully completed over April 17th and 18th, 2024. All parameters were tested in accordance with referenced methodologies. Destruction Efficiency and Capture Efficiency were both found to be within acceptable parameters.

TABLES

Table 1 - Detailed Emissions Results - Destruction Efficiency
VOC EMISSIONS TABLE

Source: RTO
RWDI Project # 2404158

Parameter	Test 1	Test 2	Test 3	Average
Date	17-Apr-24	18-Apr-24	18-Apr-24	--
Start Time:	14:20	7:45	11:50	--
Stop Time:	17:19	10:44	14:49	--
Duration (mins):	180	180	180	--
Average Temperature for RTO (^{o}F):	1550	1550	1550	1550
Inlet RTO THC Concentration (as propane) (ppmw):	144.2	160.1	146.6	150.3
Inlet RTO THC Concentration (as propane) (ppmd):	148.0	163.1	149.4	153.5
Inlet RTO THC Concentration (as propane) (mg/m3d):	271.3	299.0	273.9	281.4
Inlet RTO THC Concentration (as propane) (lb/hrd):	20.8	24.0	22.4	22.4
Inlet RTO Flow Rate (dscfm):	20,449	21,450	21,881	21,260
Inlet RTO Flow Rate (dm3/s):	9.65	10.12	10.32	10.03
Moisture:	2.5%	1.8%	1.9%	2.1%
Outlet Flow Rate (dscfm):	24,466	23,368	23,141	23,658
Outlet Flow Rate (dm^3/s):	11.54	11.02	10.92	11.16
Moisture:	3.0%	2.0%	2.2%	2.4%
Outlet THC Concentration (as propane) (ppm_w):	1.19	1.97	1.89	1.68
Outlet THC Concentration (as propane) (ppm_d):	1.23	2.01	1.93	1.72
Outlet THC Concentration (as propane) (mg/m^3_d):	2.25	3.68	3.54	3.16
Outlet THC Concentration (as propane) (lb/hr_d):	0.21	0.32	0.31	0.28
Destruction Efficiency (THC) (%):	**99.0%**	**98.7%**	**98.6%**	**98.8%**

Note: "d" indicated based on dry conditions

Table 2 - Detailed Emissions Results - Capture Efficiency

Source: Depor Coater1, Coater2, Coater3, Coater4, Acid Dip and Building Exhaust - Capture Efficiency

RWDI Project # 2404158

Parameter	Test 1	Test 2	Test 2	Average
Date	17-Apr-24	18-Apr-24	18-Apr-24	--
Start Time:	14:20	7:45	11:50	--
Stop Time:	17:19	10:44	14:49	--
Duration (mins):	90	90	90	--
Coater 1 THC Concentration (as propane) (ppmw):	0.51	1.07	1.06	0.88
Coater 1 THC Concentration (as propane) (ppmd):	0.52	1.09	1.08	0.89
Coater 1 THC Concentration (as propane) (mg/m3d):	0.95	1.99	1.98	1.64
Coater 1 THC Concentration (as propane) (lb/hrd):	0.06	0.12	0.12	0.10
Coater 1 Flow Rate (dscfm):	16,549	16,446	16,400	16,465
Coater 1 Flow Rate (dm3/s):	7.81	7.76	7.74	7.77
Moisture:	1.8%	1.5%	1.5%	1.6%
Coater 2 Flow Rate (dscfm):	15,977	16,992	16,560	16,510
Coater 2 Flow Rate (dm3/s):	7.54	8.02	7.81	7.79
Moisture:	1.8%	1.2%	1.3%	1.4%
Coater 2 THC Concentration (as propane) (ppmw):	1.14	0.88	0.62	0.88
Coater 2 THC Concentration (as propane) (ppmd):	1.16	0.89	0.63	0.89
Coater 2 THC Concentration (as propane) (mg/m3d):	2.12	1.63	1.15	1.64
Coater 2 THC Concentration (as propane) (lb/hrd):	0.13	0.10	0.07	0.10
Coater 3 THC Concentration (as propane) (ppmw):	0.86	1.08	0.70	0.88
Coater 3 THC Concentration (as propane) (ppmd):	0.87	1.09	0.71	0.89
Coater 3 THC Concentration (as propane) (mg/m3d):	1.60	2.00	1.31	1.64
Coater 3 THC Concentration (as propane) (lb/hrd):	0.08	0.10	0.06	0.1
Coater 3 Flow Rate (dscfm):	12,871	13,577	12,991	13,147
Coater 3 Flow Rate (dm3/s):	6.07	6.41	6.13	6.20
Moisture:	1.9%	1.0%	1.3%	1.4%
Coater 4 THC Concentration (as propane) (ppmw):	0.74	1.11	1.47	1.11
Coater 4 THC Concentration (as propane) (ppmd):	0.76	1.13	1.49	1.13
Coater 4 THC Concentration (as propane) (mg/m3d):	1.40	2.07	2.73	2.07
Coater 4 THC Concentration (as propane) (lb/hrd):	0.07	0.11	0.15	0.11
Coater 4 Flow Rate (dscfm):	14,053	14,623	14,738	14,471
Coater 4 Flow Rate (dm3/s):	6.63	6.90	6.95	6.83
Moisture:	2.2%	1.6%	1.2%	1.7%
Acid Dip Tank THC Concentration (as propane) (ppmw):	19.96	17.48	18.23	18.56
Acid Dip Tank THC Concentration (as propane) (ppmd):	20.34	17.73	18.52	18.86
Acid Dip Tank THC Concentration (as propane) (mg/m3d):	37.28	32.50	33.95	34.57
Acid Dip Tank THC Concentration (as propane) (lb/hrd):	2.82	2.56	2.59	2.66
Acid Dip Tank Flow Rate (dscfm):	20,200	21,019	20,405	20,541
Acid Dip Tank Flow Rate (dm3/s):	9.53	9.92	9.63	9.69
Moisture:	1.8%	1.4%	1.6%	1.6%
Building Exhaust THC Concentration (as propane) (ppmw):	22.64	21.46	22.23	22.11
Building Exhaust THC Concentration (as propane) (ppmd):	23.02	21.76	22.55	22.44
Building Exhaust THC Concentration (as propane) (mg/m3d):	42.20	39.88	41.33	41.14
Building Exhaust THC Concentration (as propane) (lb/hrd):	0.76	0.82	1.07	0.88
Building Exhaust Flow Rate (dscfm):	4,787	5,504	6,904	5,732
Building Exhaust Flow Rate (dm3/s):	2.26	2.60	3.26	2.71
Moisture:	1.7%	1.4%	1.4%	1.5%
RTO Inlet Controlled THC Concentration (as propane) (ppmw):	144.23	160.14	146.64	150.34
RTO Inlet Controlled THC Concentration (as propane) (ppmd):	147.99	163.11	149.42	153.51
RTO Inlet Controlled THC Concentration (as propane) (mg/m3d):	271.25	298.97	273.87	281.36
RTO Inlet Controlled THC Concentration (as propane) (lb/hrd):	20.76	24.00	22.42	22.39
RTO Inlet Controlled Flow Rate (dscfm):	20,449	21,450	21,881	21,260
RTO Inlet Controlled Flow Rate (dm3/s):	9.65	10.12	10.32	10.03
Moisture:	2.5%	1.8%	1.9%	2.1%
Total System THC (lb/hr)	24.7	27.8	26.5	26.3
Total RTO Inlet Controlled THC (lb/hr)	20.76	24.00	22.42	22.4
Total C1, C2, C3, C4, ADT, BE (Uncontrolled) THC (lb/hr)	3.91	3.82	4.07	3.93
Capture Efficiency (THC) (%):	84.2%	86.3%	84.6%	85.0%

Note: "d" indicated based on dry conditions

Table 3: Summary of Sampling Parameters and Methodology

Source Location	No. of Tests per Stack	Sampling Parameter	Sampling Method
RTO Outlet	3	Velocity, Temperature and Flow Rate	U.S. EPA[1] Methods 1-4
	3	Oxygen, Carbon Dioxide	U.S. EPA[1] Method 3
	3	THC/Methane/NMOC	U.S. EPA[1] Method 25A
RTO Inlet	3	Velocity, Temperature and Flow Rate	U.S. EPA[1] Methods 1-4
	3	Oxygen, Carbon Dioxide	U.S. EPA[1] Method 3
	3	THC/Methane/NMOC	U.S. EPA[1] Method 25A
Coating Exhaust 1-4	3	Velocity, Temperature and Flow Rate	U.S. EPA[1] Methods 1-4
	3	Oxygen, Carbon Dioxide	U.S. EPA[1] Method 3
	3	THC/Methane/NMOC	U.S. EPA[1] Method 25A
Building Vent Exhaust	3	Velocity, Temperature and Flow Rate	U.S. EPA[1] Methods 1-4
	3	Oxygen, Carbon Dioxide	U.S. EPA[1] Method 3
	3	THC/Methane/NMOC	U.S. EPA[1] Method 25A
Acid Dip Tank Exhaust	3	Velocity, Temperature and Flow Rate	U.S. EPA[1] Methods 1-4
	3	Oxygen, Carbon Dioxide	U.S. EPA[1] Method 3
	3	THC/Methane/NMOC	U.S. EPA[1] Method 25A

Notes:

[1] U.S. EPA - United States Environmental Protection Agency

Table 4: Sampling Summary and Sample Log

Source and Test #	Sampling Date	Start Time	End Time
Destruction Efficiency Testing			
FGVOCS System (RTO Inlet & Outlet)			
Test #1	17-Apr-24	14:20	17:19
Test #2	18-Apr-24	7:45	10:44
Test #3	18-Apr-24	11:50	14:49
Capture Efficiency Testing			
Coating Exhaust 1-4			
Test #1	17-Apr-24	14:20	17:19
Test #2	18-Apr-24	7:45	10:44
Test #3	18-Apr-24	11:50	14:49
Building Vent Exhaust			
Test #1	17-Apr-24	14:20	17:19
Test #2	18-Apr-24	7:45	10:44
Test #3	18-Apr-24	11:50	14:49
Acid Dip Tank Exhaust			
Test #1	17-Apr-24	14:20	17:19
Test #2	18-Apr-24	7:45	10:44
Test #3	18-Apr-24	11:50	14:49

Table 5: Sampling Summary - Flow Characteristics - FGVOCS System (Destruction Efficiency Testing)

RTO Inlet		T1	T2	T3	TOTAL AVERAGE
Testing Date		17-Apr-23	18-Apr-23	18-Apr-23	-
Stack Temperature	°F	181	189	196	188
Moisture	%	2.54%	1.82%	1.86%	2.07%
Velocity	ft/s	34.98	36.54	37.69	36.40
Referenced Flow Rate	CFM	20,449	21,450	21,881	21,260
RTO Outlet		**T1**	**T2**	**T3**	**TOTAL AVERAGE**
Testing Date		17-Apr-23	18-Apr-23	18-Apr-23	-
Stack Temperature	°F	260	280	299	280
Moisture	%	3.04%	2.01%	2.21%	2.42%
Velocity	ft/s	30.28	29.17	29.69	29.71
Referenced Flow Rate	CFM	24,466	23,368	23,141	23,658

Notes:

[1] Referenced flow rate expressed as dry at 101.3 kPa, 68 °F, and Actual Oxygen

Table 6: Sampling Summary - Flow Characteristics - Capture Efficiency Testing

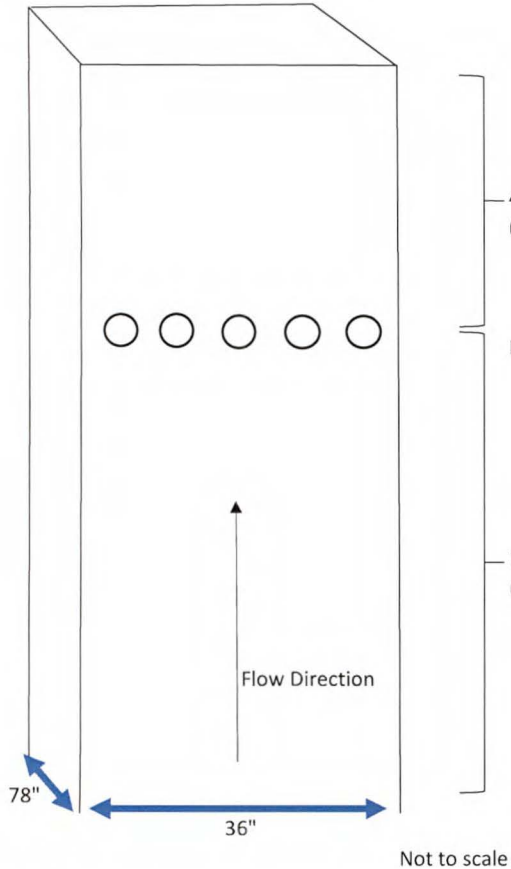
Coating Exhaust 1		T1	T2	T3	TOTAL AVERAGE
Testing Date		17-Apr-23	18-Apr-23	18-Apr-23	-
Stack Temperature	°F	84	104	107	98
Moisture	%	1.82%	1.49%	1.45%	1.59%
Velocity	ft/s	34.15	34.77	34.79	34.57
Referenced Flow Rate	CFM	16,549	16,446	16,400	16,465
Coating Exhaust 2		**T1**	**T2**	**T3**	**TOTAL AVERAGE**
Testing Date		17-Apr-23	18-Apr-23	18-Apr-23	-
Stack Temperature	°F	89	78	95	87
Moisture	%	1.78%	1.21%	1.29%	1.43%
Velocity	ft/s	33.24	34.12	34.33	33.90
Referenced Flow Rate	CFM	15,977	16,992	16,560	16,510
Coating Exhaust 3		**T1**	**T2**	**T3**	**TOTAL AVERAGE**
Testing Date		17-Apr-23	18-Apr-23	18-Apr-23	-
Stack Temperature	°F	94	77	95	89
Moisture	%	1.86%	0.96%	1.33%	1.38%
Velocity	ft/s	33.41	33.54	33.32	33.42
Referenced Flow Rate	CFM	12,871	13,577	12,991	13,146
Coating Exhaust 4		**T1**	**T2**	**T3**	**TOTAL AVERAGE**
Testing Date		17-Apr-23	18-Apr-23	18-Apr-23	-
Stack Temperature	°F	110	101	115	108
Moisture	%	2.25%	1.65%	1.24%	1.71%
Velocity	ft/s	37.66	37.96	39.05	38.22
Referenced Flow Rate	CFM	14,053	14,623	14,738	14,471
Building Vent Exhaust		**T1**	**T2**	**T3**	**TOTAL AVERAGE**
Testing Date		17-Apr-23	18-Apr-23	18-Apr-23	-
Stack Temperature	°F	93	86	95	91
Moisture	%	1.65%	1.38%	1.39%	1.47%
Velocity	ft/s	4.32	4.84	6.18	5.11
Referenced Flow Rate	CFM	4,787	5,504	6,904	5,732
Acid Dip Tank Exhaust		**T1**	**T2**	**T3**	**TOTAL AVERAGE**
Testing Date		17-Apr-23	18-Apr-23	18-Apr-23	-
Stack Temperature	°F	92	85	95	91
Moisture	%	1.84%	1.38%	1.59%	1.60%
Velocity	ft/s	48.15	48.86	48.40	48.47
Referenced Flow Rate	CFM	20,200	21,019	20,405	20,541

Notes:

[1] Referenced flow rate expressed as dry at 101.3 kPa, 68 °F, and Actual Oxygen

FIGURES

Figure No. 1: RTO Outlet



Not to scale

Diameter: 36" x 78"
Effective Diameter: 49.26 inches

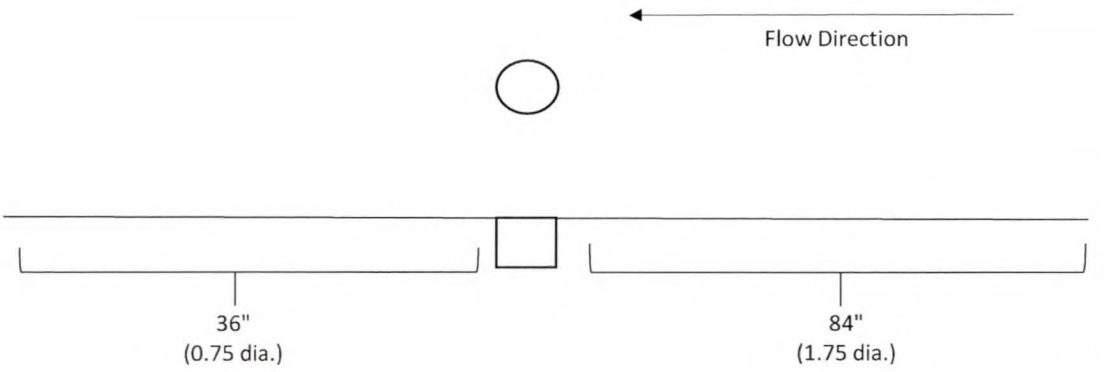
Point	Distance from inside Wall (inches)				
	Port 1	Port 2	Port 3	Port 4	Port 5
1	4.5	4.5	4.5	4.5	4.5
2	13.5	13.5	13.5	13.5	13.5
3	22.5	22.5	22.5	22.5	22.5
4	31.5	31.5	31.5	31.5	31.5

RTO Outlet
Depor Industries
Shelby Twp., MI

Date:
April 17-18th, 2024

RWDI USA LLC
2239 Star Court
Rochester Hills, MI 48309

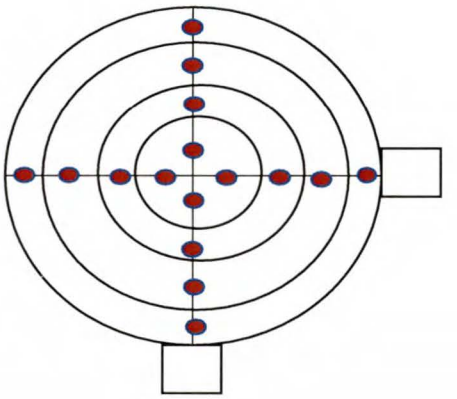
Figure 2: RTO Inlet Stack Diagram



Stack Diameter = 48"

Sampling Points (in.)

1	1.54
2	5.04
3	9.31
4	15.50
5	32.50
6	38.69
7	42.96
8	46.46

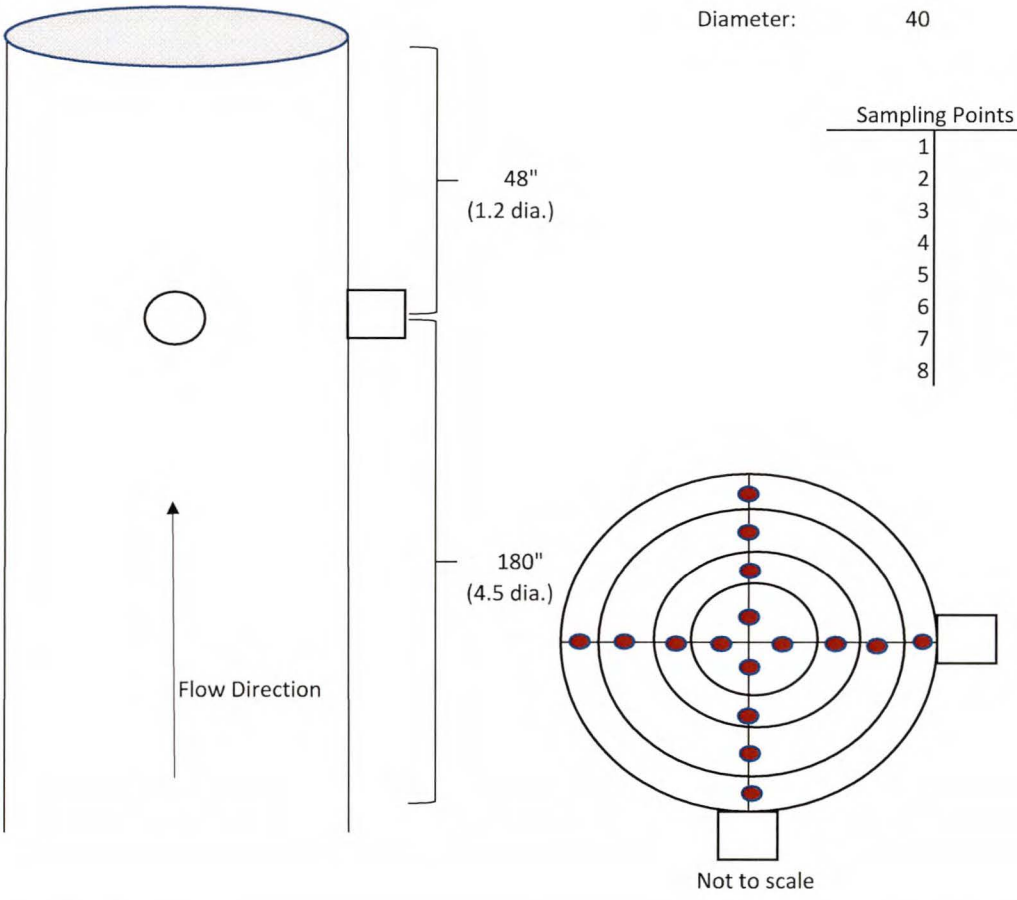


Not to scale

RTO Inlet
Depor Industries
Shelby Township, MI

RWDI USA LLC
2239 Star Court
Rochester Hills, MI 48309

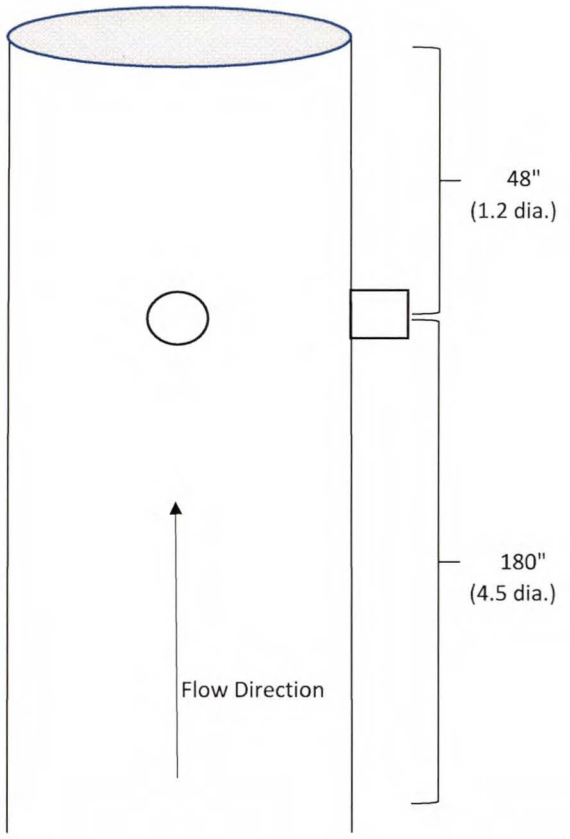
Figure 3: Coating Exhaust 1 and 2 Stack Figure



Coating 1 and 2 Exhaust Stacks
Depor Industries
Shelby Township, MI

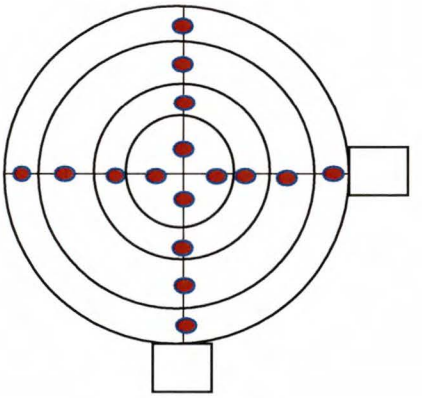
RWDI USA LLC
2239 Star Court
Rochester Hills, MI 48309

Figure 4: Coating Exhaust 3 and 4 Stack Figure



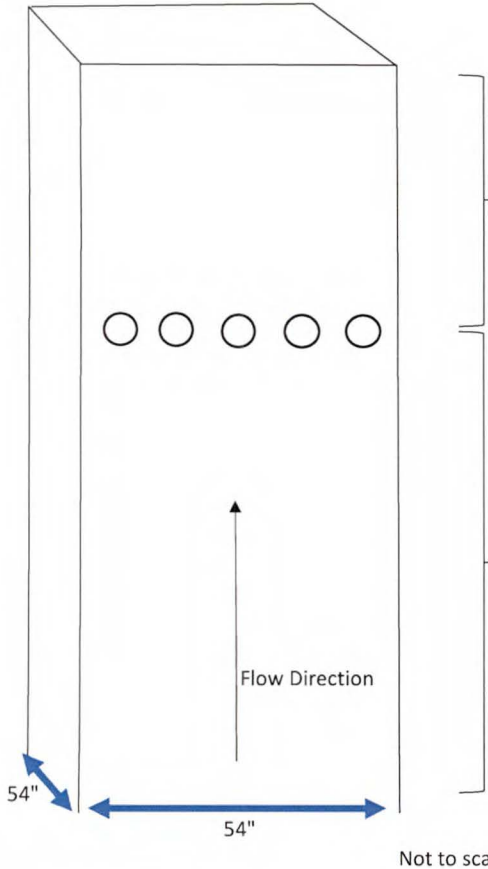
Diameter: 36

Sampling Points (in.)	
1	1.15
2	3.78
3	6.98
4	11.63
5	24.37
6	29.02
7	32.22
8	34.85



Not to scale

Figure No. 5: Building Exhaust Stack Diagram



Diameter: 54" x 54"
Effective Diameter: 54.00 inches

Point	Distance from inside Wall (inches)			
	Port 1	Port 2	Port 3	Port 4
1	6.8	6.8	6.8	6.8
2	20.3	20.3	20.3	20.3
3	33.8	33.8	33.8	33.8
4	47.3	47.3	47.3	47.3

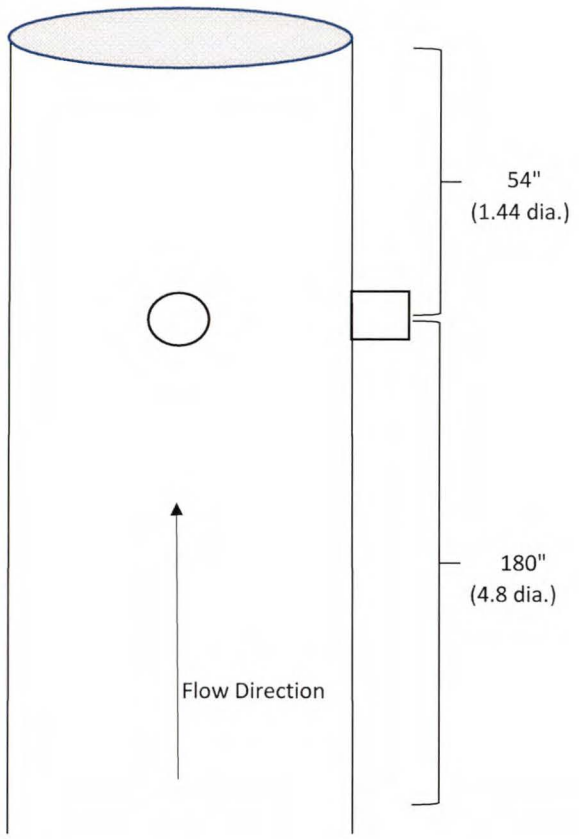
Not to scale

Building Exhaust Stack Figure
Depor Industries
Shelby Twp., MI

Date:
April 17-18th, 2024

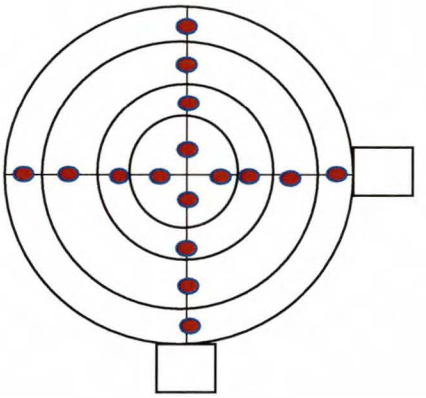
RWDI USA LLC
2239 Star Court
Rochester Hills, MI 48309

Figure 6 - Acid Dip Tank Exhaust Stack Diagram



Diameter: 37.5

Sampling Points (in.)	
1	1.20
2	3.94
3	7.28
4	12.11
5	25.39
6	30.23
7	33.56
8	36.30

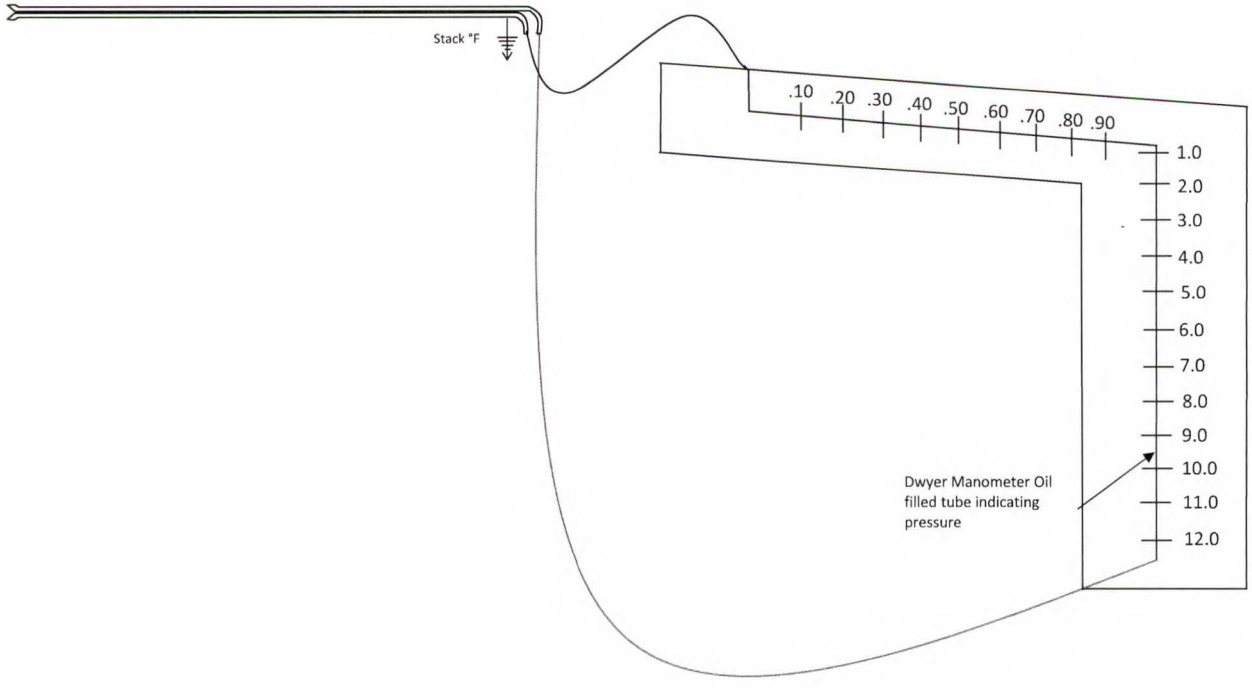


Not to scale

Acid Dip Tank Exhaust
Depor Industries
Shelby Township, MI

RWDI USA LLC
2239 Star Court
Rochester Hills, MI 48309

Figure No. 7: USEPA Method 2 Schematic



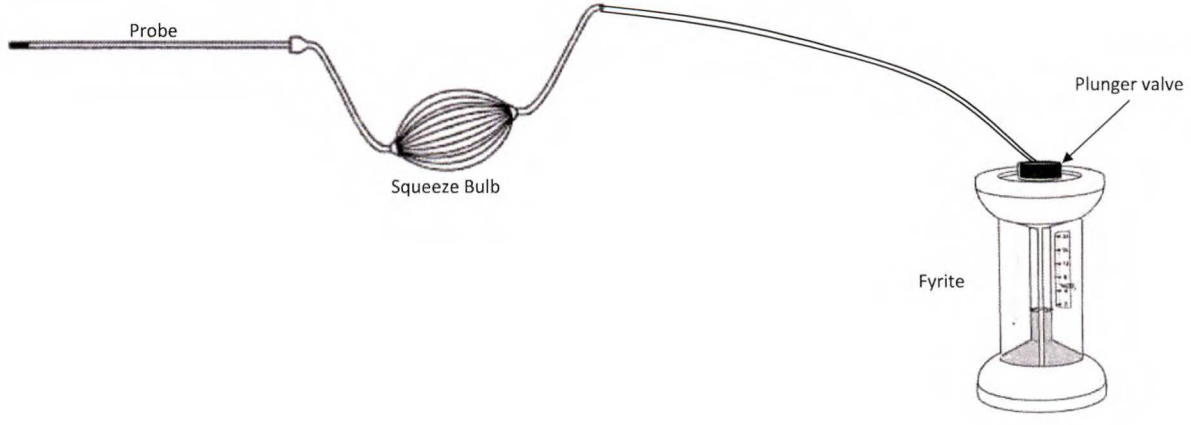
USEPA Method 2

Depor Industries
Shelby Township, MI

Project# 2404158

Date: April 17-18, 2024

Figure No. 8: USEPA Method 3 Schematic (Fyrite)



USEPA Method 3

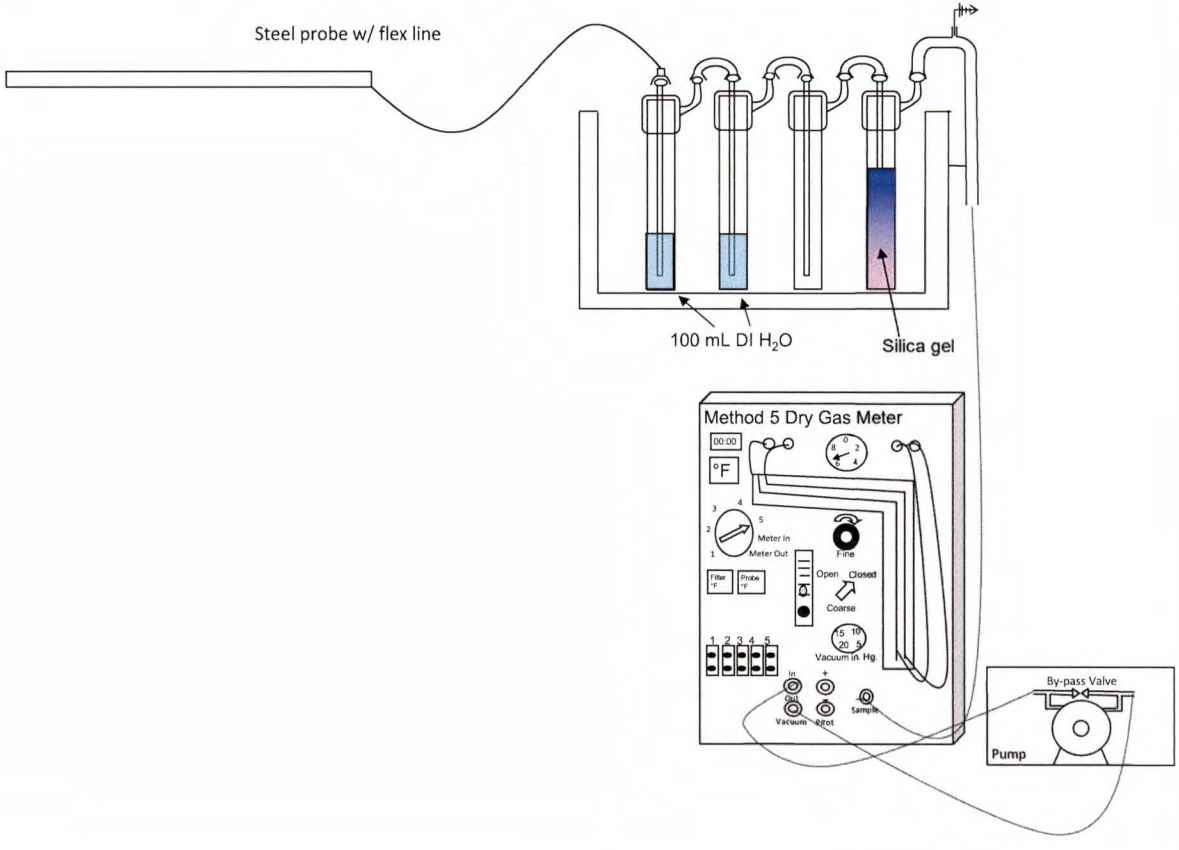
Depor Industries

Shelby Township, MI

Project# 2404158

Date: April 17-18, 2024

Figure No. 9: USEPA Method 4 Schematic



USEPA Method 4

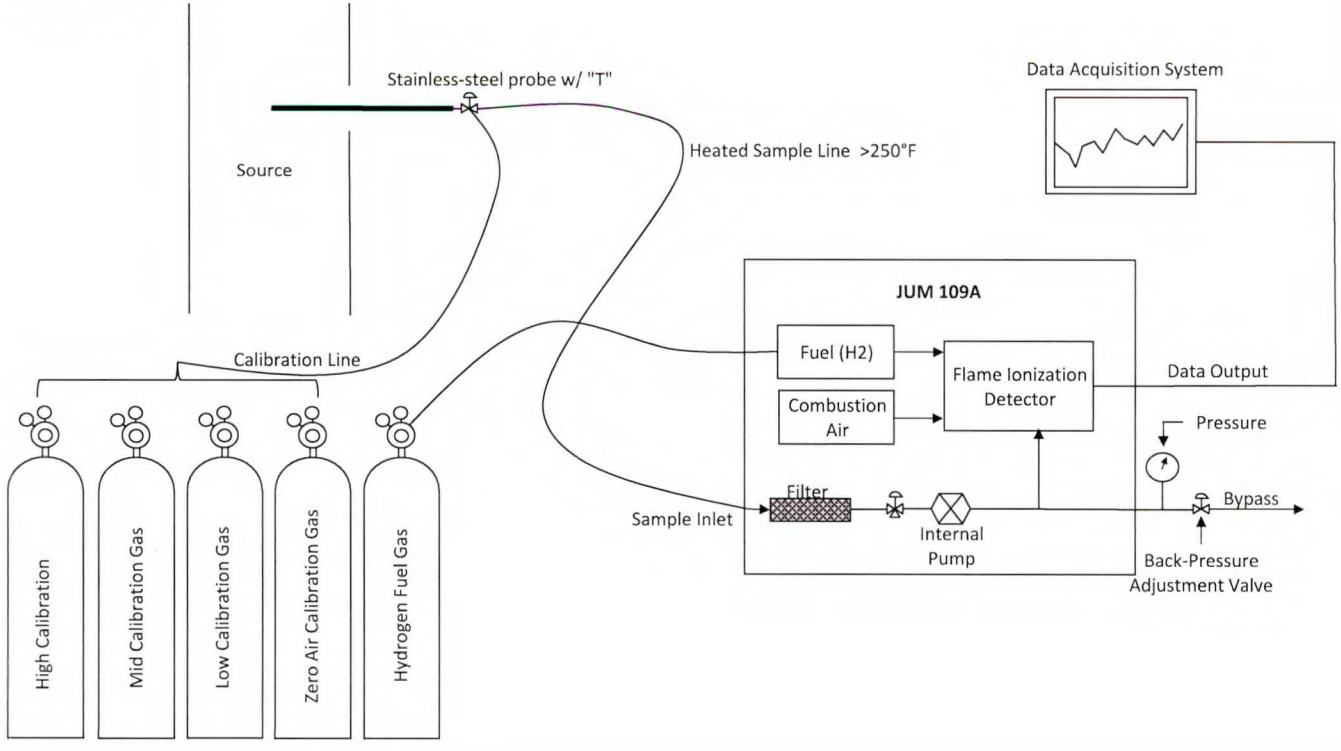
Depor Industries

Shelby Township, MI

Project# 2404158

Date: April 17-18, 2024

Figure No. 10: USEPA Method 25A Schematic



USEPA Method 25A

Depor Industries

Shelby Township, MI

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