mostardi platt

Filterable Particulate Matter
Compliance Emissions Test Report

Holcim (US) Inc. Lafarge Alpena
Alpena Cement Plant
Kiln 21 Breaching Duct
Alpena, Michigan
April 25, 2023

Report Submittal Date
May 25, 2023

Project No. M231805

Crown Point, IN | Mendota Heights, MN | Denver, CO | Henderson, NV

Corporate Headquarters
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Elmhurst, Illinois 60126
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MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
AIR QUALITY DIVISION

RENEWABLE OPERATING PERMIT REPORT CERTIFICATION

Authorized by 1994 P.A. 451, as amended. Failure to provide this information may result in civil and/or criminal penalties.

Reports submitted pursuant to R 336.1213 (Rule 213), subrules (3)(c) and/or (4)(c), of Michigan's Renewable Operating Permit (ROP) program must be certified by a responsible official. Additional information regarding the reports and documentation listed below must be kept on file for at least 5 years, as specified in Rule 213(3)(b)(ii), and be made available to the Department of Environment, Great Lakes, and Energy, Air Quality Division upon request.

Source Name: Holcim (US) d/b/a Lafarge Alpena — County: Alpena

Source Address: 1435 Ford Avenue — City: Alpena

AQD Source ID (SRN): B1477 — ROP No.: MI-ROP-B1477-2020b — ROP Section No.:

Please check the appropriate box(es):

☐ **Annual Compliance Certification (Pursuant to Rule 213(4)(c))**

Reporting period (provide inclusive dates): From _____ To _____

☐ 1. During the entire reporting period, this source was in compliance with **ALL** terms and conditions contained in the ROP, each term and condition of which is identified and included by this reference. The method(s) used to determine compliance is/are the method(s) specified in the ROP.

☐ 2. During the entire reporting period this source was in compliance with all terms and conditions contained in the ROP, each term and condition of which is identified and included by this reference, **EXCEPT** for the deviations identified on the enclosed deviation report(s). The method used to determine compliance for each term and condition is the method specified in the ROP, unless otherwise indicated and described on the enclosed deviation report(s).

☐ **Semi-Annual (or More Frequent) Report Certification (Pursuant to Rule 213(3)(c))**

Reporting period (provide inclusive dates): From _____ To _____

☐ 1. During the entire reporting period, **ALL** monitoring and associated recordkeeping requirements in the ROP were met and no deviations from these requirements or any other terms or conditions occurred.

☐ 2. During the entire reporting period, all monitoring and associated recordkeeping requirements in the ROP were met and no deviations from these requirements or any other terms or conditions occurred, **EXCEPT** for the deviations identified on the enclosed deviation report(s).

☒ **Other Report Certification**

Reporting period (provide inclusive dates): From April 25, 2023 To _____

Additional monitoring reports or other applicable documents required by the ROP are attached as described:

Filterable Particulate Matter Compliance Emissions Test Report

Kiln 21

Project No. M231805

I certify that, based on information and belief formed after reasonable inquiry, the statements and information in this report and the supporting enclosures are true, accurate and complete

Jeffrey Scott	Plant Manager	(989) 354-4171
Name of Responsible Official (print or type)	Title	Phone Number

Signature of Responsible Official — Date: 5/19/2023

* Photocopy this form as needed.

EQP 5736 (Rev 04/30/2019)

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1.0 EXECUTIVE SUMMARY

Mostardi Platt conducted a particulate emission compliance test program for Holcim (US) Inc. Lafarge Alpena at the Alpena Cement Plant in Alpena, Michigan, on the Kiln 21 Breaching Duct on April 25, 2023. This report summarizes the results of the test program and test methods.

The test locations, test dates, and test parameter are summarized below.

TEST INFORMATION		
Test Locations	**Test Dates**	**Test Parameter**
Kiln 21 Breaching Duct	April 25, 2023	Filterable Particulate Matter (FPM)

The purpose of the test program was to demonstrate compliance with Title 40, *Code of Federal Regulations*, Part 60 (40CFR60), and 40CFR63, Subpart LLL "*National Emission Standards for Hazardous Air Pollutants (NESHAP) for the Portland Cement Manufacturing Industry and Standards of Performance for Portland Cement Plants.*"

Parameter	Date	Units	Emission Rate	Emission Limit	CPMS SSOL
FPM	4/25/23	lb/ton	0.009 lb/ton	0.07 lb/ton	5.41

The CPMS SSOL was determined to be 5.41 for Kiln 21 (based on mA recorded by CPMS during testing respectively).

The identifications of the individuals associated with the test program are summarized below.

TEST PERSONNEL INFORMATION		
Location	**Address**	**Contact**
Test Facility	Holcim (US) Inc. Alpena Plant 1435 Ford Avenue Alpena, Michigan 49707	Ms. Mallory Miller Area Environmental Manager Mallory.Miller@lafargeholcim.com
Testing Company Supervisor	Mostardi Platt 888 Industrial Drive Elmhurst, Illinois 60126	Mr. Joshua Kukla Project Supervisor 630-993-2100 jkukla@mp-mail.com
Testing Company Personnel		Mr. Aaron Benninghoff Test Engineer
		Mr. Justin Lopez Test Technician

2.0 TEST METHODOLOGY

Emission testing was conducted following the United States Environmental Protection Agency (USEPA) methods specified in 40CFR60, Appendix A in addition to the Mostardi Platt Quality Manual. Schematics of the test section diagrams and sampling trains used are included in Appendix A and B respectively. Calculation nomenclature are included in Appendix C. Laboratory analysis for each test run are included in Appendix D. Reference Method and CEMS data and process data as provided by Holcim (US) Inc. are included in Appendix E and F.

The following methodologies were used during the test program:

Method 1 Sample and Velocity Traverse Determination

Test measurement points were selected in accordance with USEPA Method 1, 40CFR60, Appendix A. The characteristics of the measurement location are summarized below.

TEST POINT INFORMATION AT KILN 21 OUTLET DUCT							
Stack Dimensions (Feet)	Stack Area (Square Feet)	No. of Ports	Port Length (Inches)	Upstream Diameters	Downstream Diameters	Test Parameter	Number of Sampling Points
8.00 x 8.75	70.000	4	3.25	0.50	1.11	FPM	48

Method 2 Volumetric Flow Rate Determination

Gas velocity was measured following USEPA Method 2, 40CFR60, Appendix A, for purposes of calculating stack gas volumetric flow rate and emission rates on a lb/hr basis. An 8-foot-long S-type pitot tube, 0-10" differential pressure gauge, and K-type thermocouple and temperature readout were used to determine gas velocity at each sample point. All of the equipment used was calibrated in accordance with the specifications of the Method. Copies of field data sheets are included in Appendix G. Calibration data are presented in Appendix H. This testing met the performance specifications as outlined in the Method.

Method 3A Oxygen (O_2)/Carbon Dioxide (CO_2) Determination

Stack gas O_2 and CO_2 concentrations were determined in accordance with USEPA Method 3A. An ECOM analyzer was used to determine the O_2 and CO_2 concentrations in the manner specified in the Method. The O_2 instrument operates in the nominal range of 0% to 25% with the specific range determined by the high-level calibration gas. The CO_2 instrument operates in the nominal range of 0% to 20% with the specific range determined by the high-level calibration gas. High and mid-range calibrations were performed using USEPA Protocol gas. Zero nitrogen (a low ppm pollutant in balance nitrogen calibration gases) was introduced during other instrument calibrations to check instrument zero. Zero and mid-range calibrations were performed using USEPA Protocol gas after each test run. Calibration data and copies of the gas cylinder certifications are found in Appendices H and I. This testing met the performance specifications as outlined in the Method.

Method 5 Filterable Particulate Matter (FPM) Determination

Stack gas filterable PM concentrations and emission rates were determined in accordance with Method 5. The probe and filter housing were maintained at a temperature of 248°F +/- 25°F. An Environmental Supply Company, Inc. sampling train was used to sample stack gas at an isokinetic rate. Four impingers were utilized, the first two each containing 100ml of deionized water, the third was empty, and the fourth contained approximately 200 grams of silica gel. The impingers were weighed prior to and after each test run in order to determine moisture content of the stack gas. The total sample time was 84 minutes, with forty-two (42) sample points being utilized (14 points per port, 3 total ports). A minimum of 1 dscm was sampled for each run.

PM in the sample probe was recovered utilizing acetone; a minimum of three passes of the probe brush through the entire probe was performed, followed by a visual inspection of the acetone exiting the probe. If the acetone solution exiting the probe was clear, the wash was considered complete, if not, another pass of the brush through the probe was made and inspected until the solution was clear. The nozzle was then removed from the probe and cleaned in a similar manner, utilizing an appropriately sized nozzle brush. The probe wash and filter catch were analyzed by Mostardi Platt personnel. Laboratory analysis data are found in Appendix D. Calibration data are presented in Appendix H.

3.0 TEST RESULT SUMMARY

Client: Holcim (US) Inc.
Facility: Alpena Cement Plant
Test Location: Kiln 21 Breaching Duct
Test Method: 5

Source Condition	Normal	Normal	Normal	
Date	4/25/23	4/25/23	4/25/23	
Start Time	10:24	14:00	16:36	
End Time	12:23	16:46	19:12	
	Run 1	Run 2	Run 3	Average
Stack Conditions				
Average Gas Temperature, °F	380.5	380.8	382.0	381.1
Flue Gas Moisture, percent by volume	5.8%	4.2%	6.6%	5.5%
Average Flue Pressure, in. Hg	29.36	29.36	29.36	29.36
Gas Sample Volume, dscf	70.414	67.865	67.686	68.655
Average Gas Velocity, ft/sec	41.432	39.876	40.063	40.457
Gas Volumetric Flow Rate, acfm	174,015	167,480	168,263	169,919
Gas Volumetric Flow Rate, dscfm	101,032	98,869	96,761	98,887
Gas Volumetric Flow Rate, scfm	107,276	103,212	103,548	104,679
Average $\%CO_2$ by volume, dry basis	16.2	16.4	16.2	16.3
Average $\%O_2$ by volume, dry basis	9.3	9.4	9.4	9.4
Isokinetic Variance	102.2	100.7	102.6	101.8
Clinker Production Rate, ton/hr	49.0	48.4	47.2	48.2
CPMS Response, mA	4.173	4.228	4.286	4.229
Filterable Particulate Matter (Method 5)				
grams collected	0.00167	0.00257	0.00222	0.00215
mg/dscm	0.838	1.337	1.158	1.1111
grains/dscf	0.0004	0.0006	0.0005	0.0005
lb/hr	0.317	0.495	0.420	0.411
lb/ton of clinker	0.006	0.010	0.009	0.009

Site Specific Operating Limit (SSOL) Determination	
Source Emissions Limit, lb/ton	0.07
CPMS Zero, mA	4.0
Filterable Particulate Matter, % of Emissions Limit	12.2%
SSOL	5.41

4.0 CERTIFICATION

Mostardi Platt is pleased to have been of service to Holcim (US) Inc. If you have any questions regarding this test report, please do not hesitate to contact us at 630-993-2100.

As the program manager, I hereby certify that this test report represents a true and accurate summary of emissions test results and the methodologies employed to obtain those results. The test program was performed in accordance with the test methods and the Mostardi Platt Quality Manual, as applicable.

MOSTARDI PLATT

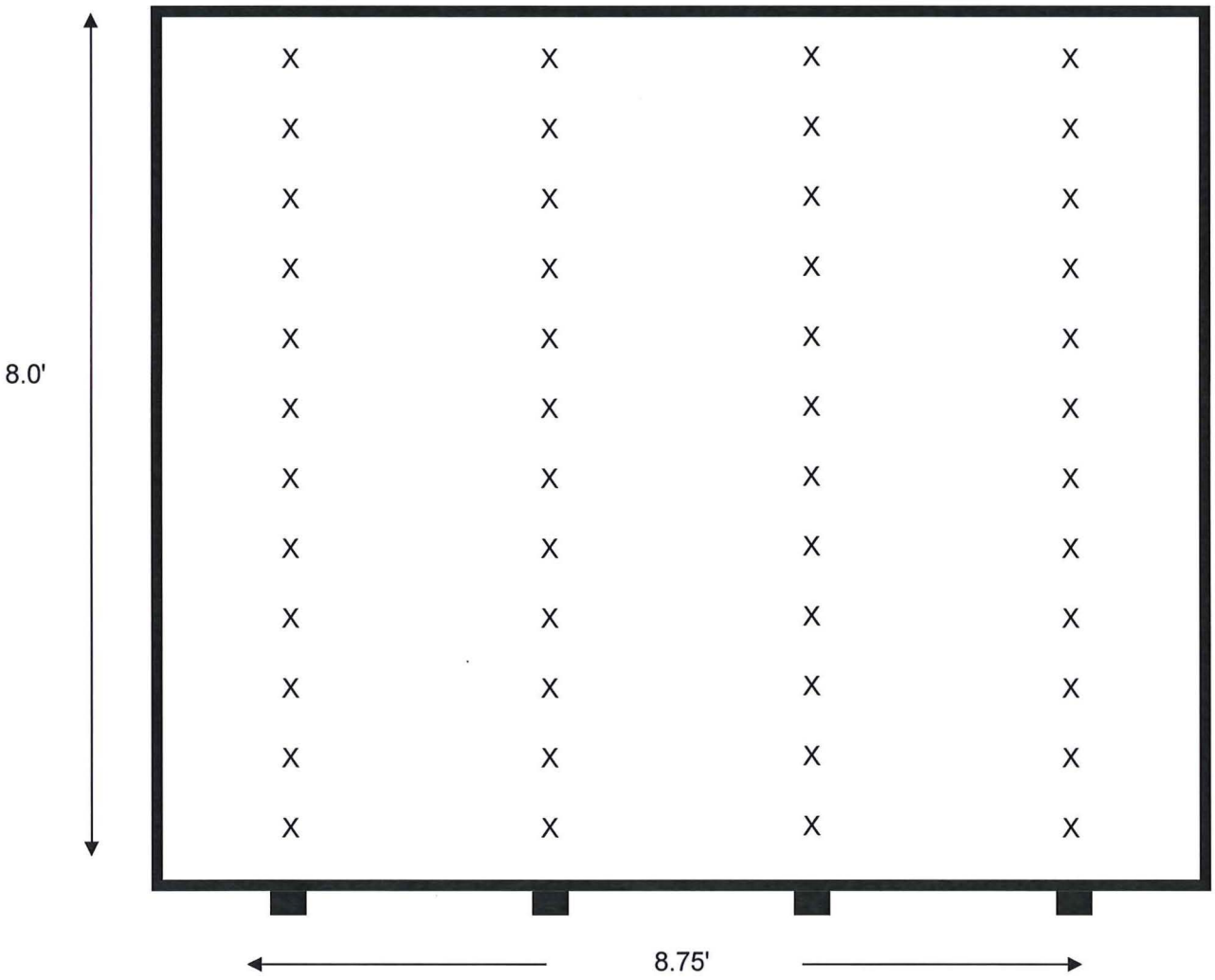
Joshua Kukla — Project Manager

Eric L. Ehlers — Quality Assurance

APPENDICES

Appendix A - Test Section Diagrams

EQUAL AREA TRAVERSE FOR RECTANGULAR DUCTS



Job: Holcim (US) Inc.
Alpena Plant

Date: May 25, 2023

Test Location: Kiln 21 Breaching Duct

Length: 8.00 feet

Width: 8.75 feet

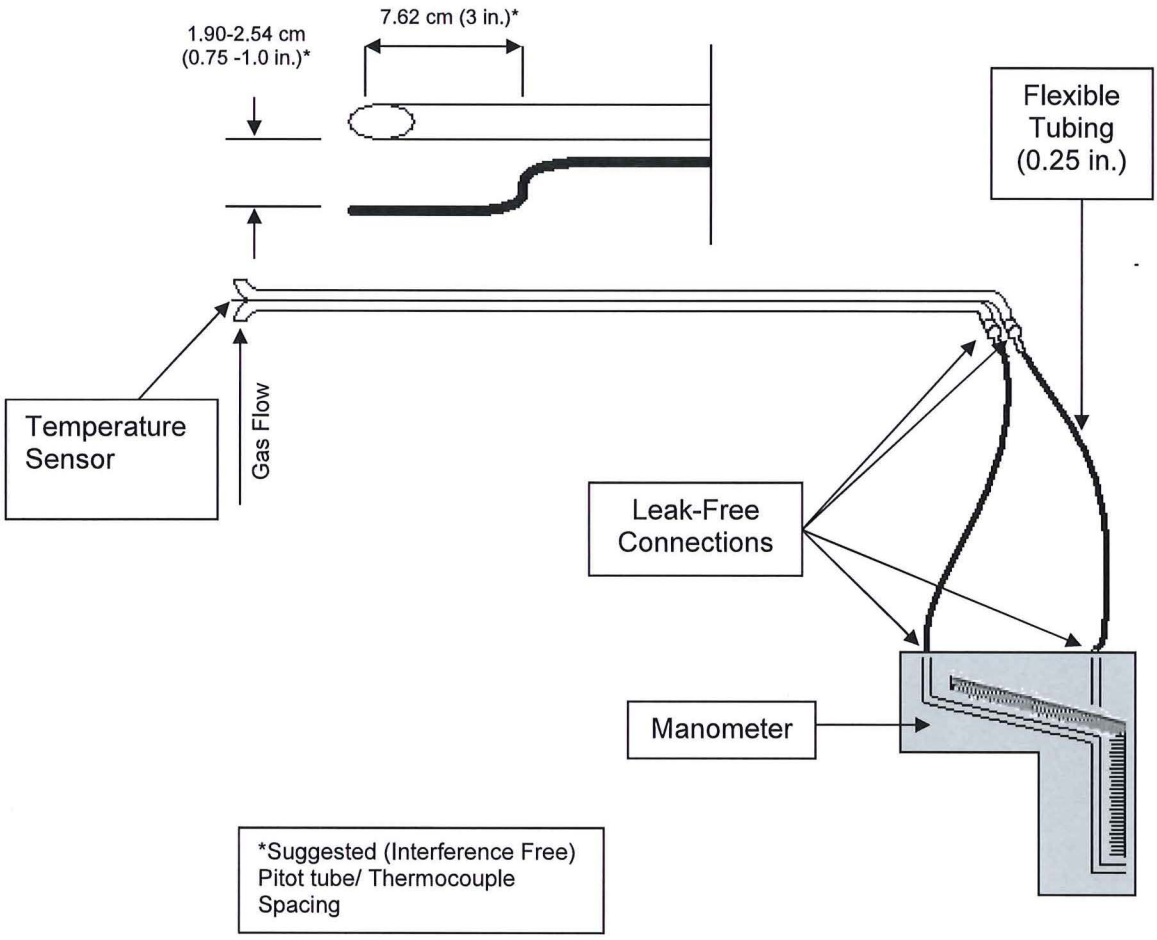
Area: 70.00 square feet

No. Test Ports: 4

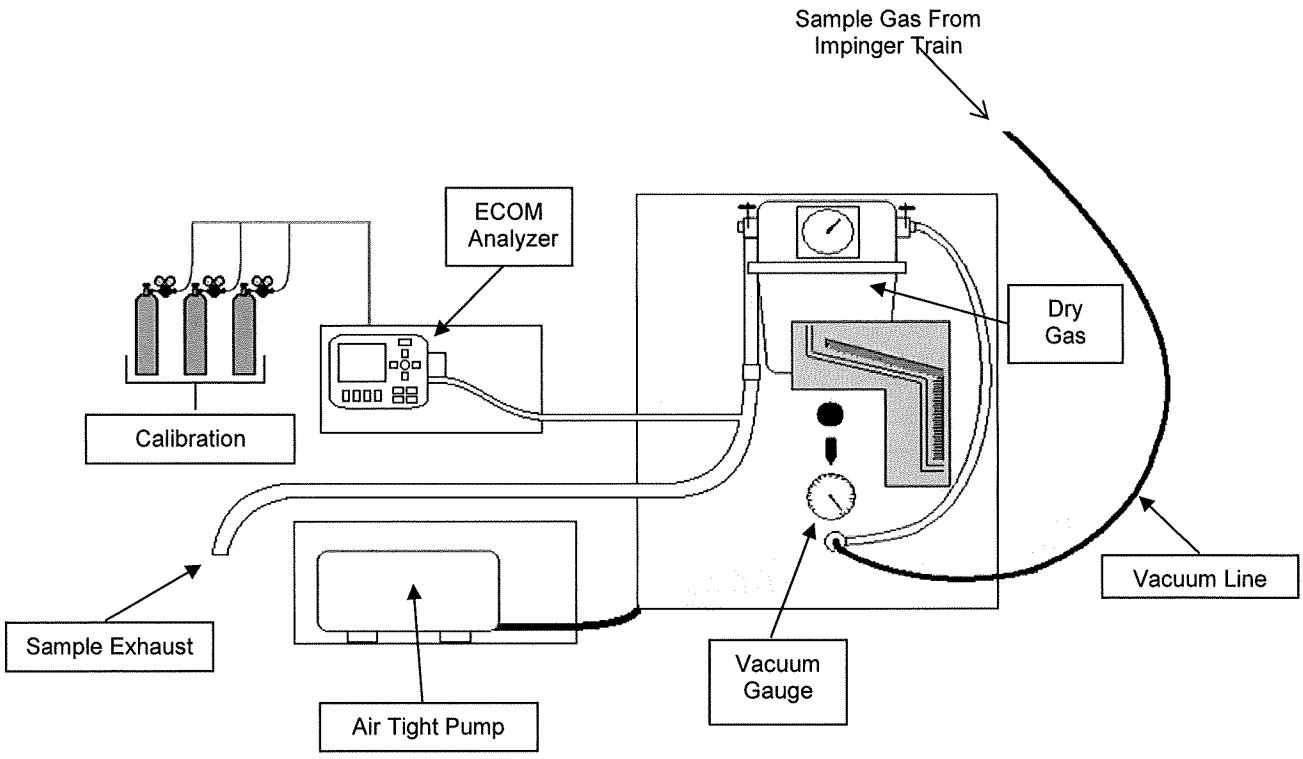
Tests Points per Port: 12

Appendix B - Sample Train Diagrams

USEPA Method 2 – Type S Pitot Tube Manometer Assembly



USEPA Method 3A - Integrated Oxygen/Carbon Dioxide Sample Train Diagram Utilizing ECOM To Measure from Sample Exhaust



USEPA Method 5- Particulate Matter Sample Train Diagram