

**DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection**

A390053808

FACILITY: Martin Marietta Magnesia Specialties, LLC		SRN / ID: A3900
LOCATION: 1800 Eastlake Rd., MANISTEE		DISTRICT: Cadillac
CITY: MANISTEE		COUNTY: MANISTEE
CONTACT: Kurt Krueger ,		ACTIVITY DATE: 05/21/2020
STAFF: Kurt Childs	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: 2020 FCE, PCE1 FGPERICLASEPLNT.		
RESOLVED COMPLAINTS:		

2020 Partial Compliance Evaluation (PCE), FGPERICLASEPLNT - Virtual Site Inspection, Records and Reporting Review

PCE conducted by AQD Staff Kurt Childs to determine compliance with the requirements in FGPERICLASEPLNT of Renewable Operating Permit (ROP) No. MI-ROP-A3900-2015a. Mr. Kurt Krueger provided the requested records and participated in the virtual site inspection. A renewal application for MI-ROP-A3900-2015a has been submitted by Martin Marietta and is currently under review.

A virtual site inspection of this portion of the Martin Marietta Magnesia Specialties plant was conducted in cooperation with Martin Marietta staff for the purpose of testing the potential for remote site visits using videoconferencing technologies.

The equipment in FGPERICLSEPLNT is used to produce a variety of Magnesium Oxide (MgO) products from magnesium hydroxide produced in other areas of the plant. The magnesium hydroxide slurry is pumped from storage tanks to either the #3 rotary kiln (#3 Packhouse area) or Herreshoff furnaces and shaft kilns in FGPERICLSEPLNT depending on the type of product desired.

The rotary kiln and multi-hearth Herreshoff furnaces are used to remove free and molecularly bound water from magnesium hydroxide to form different grades of magnesium oxide. Some of the magnesium oxide is processed further in vertical "shaft" kilns to generate periclase for use in refractory brick. At the time of the inspection, "Lightburn" MgO was being produced so the shaft kilns were not operating. Only the #1 (EUHERRFUR1) and #2 (EUHERRFUR2) Herreshoff furnaces were running at the time of the inspection.

The Martin Marietta Magnesia Specialties plant operates 24 hrs. per day and 7 days per week although not all processes or equipment are always operating. The plant has switched to fueling all processes with natural gas. Coal, coke, and fuel oil are no longer used at all. At the time of the inspection the weather was clear, 70 degrees F and calm winds. Each of the FGPERICLSEPLNT stacks was observed via Mr. Krueger's cell phone camera shared over Skype for Business. There were no visible emissions with the exception of possible water vapor or light opacity from the EUHERRFUR2 stack. Most likely this was water vapor as review of the continuous opacity monitor for EUHERRFUR2 later showed opacity to be only 1.76%

Prior to the inspection, AQD staff requested records for FGPERICLSEPLNT including control equipment operational data. Records of differential pressure and visible emissions are maintained for each air pollution control devices each shift. I requested records for random dates each month for the previous 12 month rolling time-period (attached).

FG-PERICLASEPLNT

FGPERICLASEPLNT is a separate production area located on the "hill". It includes three Herreshoff furnaces and two shaft kilns with coolers. Emissions from the flexible group are controlled by three ESPs (HF-ESP1, HF-ESP2, HF-ESP3). Emissions from each shaft kiln are controlled by two separate cyclones.

Emission Limits – Emission limits apply to particular combinations of Herreshoffs, shaft kilns and ESPs. These operating scenarios differ somewhat from how M-M is allowed to operate based on

compliance testing. This issue was discussed in detail in Activity Report A390039511. The operating scenarios that have been validated as in compliance with the emission limits through stack testing conducted in 2013, 2014 and 2016 include:

1. EUHERRFURN1 with HF-ESP1.
2. EUHERRFURN2 with EUSHAFTKILN2 and HF-ESP2.
3. EUHERRFURN3 with HF-ESP3.
4. EUHERRFURN3 and EUSHAFTKILN2 and/or EUSHAFTKILN3 with HF-ESP3.

At the time of the inspection, the above operating scenarios that were being used included 1 and 2 (SK2 not in use).

Particulate emissions from EUHERRFURN1 and EUSHAFTKILN3 are limited to 0.20 pounds per 1,000 pounds of exhaust gases wet. The reference to EUSHAFTKILN3 in Section 1, Emission Limits is an error. The limit actually applies to EUHERRFURN1 and EUSHAFTKILN2 as evidenced by the remaining conditions in the ROP. This error has been corrected in the draft ROP renewal. However, stack testing that was conducted in November 2019 involved EUHERRFURN1 only, Mr. Bob Gutowski of Martin Marietta confirmed that EUSHAFTKILN2 is no longer connected to EUHERRFURN1. Therefore the test was conducted only with EUHERRFURN1 operating with control by HF-ESP1. The results of the 11/19 stack test indicate particulate emissions from the emission unit were 0.0359 pounds per 1,000 pounds of exhaust gases on a dry basis. The test results were to be reported on a wet basis, not a dry basis. AQD TPU reviewed the report and determined that the test also demonstrated compliance on a wet basis.

Particulate matter emissions from Herreshoff Furnace No. 2, EUSHAFTKILN2, and EUSHAFTKILN3 are limited to 0.20 pounds per 1,000 pounds of exhaust gases. Stack testing in 2016 indicates particulate emissions from the emission units were 0.02 pounds per 1,000 pounds of exhaust gases.

Particulate matter emissions from Herreshoff Furnace No. 3, EUSHAFTKILN2, and EUSHAFTKILN3 are limited to 0.055 pounds per 1,000 pounds of exhaust gases. Stack testing in December 2018 indicates particulate matter emissions were 0.017 pounds per 1,000 pounds of exhaust gases and 0.020 lbs per 1,000 pounds of exhaust gases on a dry basis.

Material Limits – There are no material limits associated with this flexible group therefore this section is not applicable.

Process/Operational Restrictions – The emission units are not allowed to operate unless their associated ESP is installed and operating properly. Proper operation includes operating the ESP in automatic mode and monitoring and recording any corrective action taken if the ESP is placed in manual mode. Records indicate the ESPs have operated properly.

The shaft kilns are prohibited from bypassing control equipment for more than 2 hours during a control equipment malfunction. Records of each control device by-pass event for the past 12 months were provided and indicate that the control devices are regularly bypassed to heat up the kilns and the timeframe varies from one to eight hours, though two to three hours is most common. No bypass events were attributed to control device failure.

At the time of the inspection the production rates were:

EUHERRFURN1: 5.48 tons per hour

EUHERRFURN2: 4.5 tons per hour

At the time of the inspection the ESP readings were as follows:

Electrostatic Precipitator HF-ESP1

Field	Voltage (100-480)	Primary Current	Spark Rate (0-60)
A	271	88	0
B	224	88	0
C	216	88	0

Electrostatic Precipitator HF-ESP2

Field	Voltage (100-480)	Primary Current	Spark Rate (0-60)
A	244	130	0
B	216	130	0
C	Data missing	130	0

These operating parameters were within the ranges established for proper operation.

The cyclones associated with the flexible group are required to operate within the differential pressure ranges specified in the MAP. Records requested prior to the inspection indicate the cyclones operated within the 2"-8" differential pressure range (see attached records). At the time of the inspection none of the shaft kilns or cyclones were operating.

There is a bypass stack between EUHERRFUR1 and HF-ESP1 and, in fact a portion of the bypass stack serves as ductwork from the furnace to the ESP. Bypass is controlled by a manual valve and is not operated in the control room. The bypass does not have a COMS while the stack for HF-ESP1 (and HF-ESP2) does. Therefore, bypass condition can be verified by COMS readings and visual observation. The ESP was not being bypassed at the time of the inspection.

Design/Equipment Parameters – The duct from EUHERRFUR3 to HF-ESP2 inside diameter is not allowed to exceed 24 inches. This dimension was not verified during the inspection however, there appeared to be no modifications to the duct.

The shaft kiln cyclones are equipped with differential pressure gauges as required.

Continuous opacity monitoring systems (COMS) were installed at the exhaust points of HF-ESP1 and 2 and were operating at the time of the inspection. Opacity from HF-ESP1 was 2.17% and opacity from HF-ESP2 was 1.76%.

Testing/Sampling – All required stack testing is current based on testing conducted in 2016, 2018 and 2019.

Monitoring/Recordkeeping – COMS-recorded opacity is used as an indicator of proper operation of the HF-ESP1 and HF-ESP2 in addition to demonstrating compliance Rule 301. The appropriate range of opacity which defines proper operation of each ESP is 20 percent opacity. For CAM purposes, an excursion is defined as 2 consecutive one-hour block average opacity values greater than 12 percent.

The spark rate and voltage of each ESP is used for determining proper function of the control devices. Records submitted by the facility, semiannual deviation reports, and CAM reports indicate each ESP has operated properly and no significant excursions of the monitored parameters have occurred.

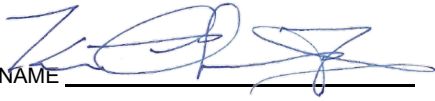
Reporting – All semiannual deviation reports, annual certifications of compliance, CAM reports, and quarterly excess emission reports were previously submitted in a timely manner and reviewed by the AQD. Semiannual EER and CAM reports submitted by the facility indicate no significant excess emissions and only one CAM excursion for EUHERRFUR2 opacity during 2019.

Stack/Vent Restrictions – The stack for ESP No. 3 appeared to be constructed in accordance with the parameters listed in the ROP.

Other Requirements – Based upon the review of records, AQD staff does not feel that the CAM plan needs to be modified at this time.

CONCLUSION

Based on the site inspection and review of records and reporting, AQD staff has determined that FGPERICLSEPLNT at the source appears to be in compliance with ROP No. MI-ROP-A3900-2015a at this time.

NAME 

DATE 5-21-20

SUPERVISOR 