

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection

N788860878

FACILITY: ALLOY RESOURCE CORPORATION		SRN / ID: N7888
LOCATION: 2281 PORT CITY BLVD, MUSKEGON		DISTRICT: Grand Rapids
CITY: MUSKEGON		COUNTY: MUSKEGON
CONTACT: Tony Trask , Plant Manager		ACTIVITY DATE: 11/18/2021
STAFF: Eric Grinstern	COMPLIANCE STATUS: Compliance	
SUBJECT: Unannounced on-site compliance inspection		SOURCE CLASS: SM OPT OUT
RESOLVED COMPLAINTS:		

FACILITY DESCRIPTION

The facility is a secondary aluminum processor that utilizes an 80,000-pound holding capacity reverberatory furnace and a 20,000-pound holding capacity rotary furnace to process secondary aluminum scrap. The facility processes various forms of aluminum scrap, including die cast scrap, turnings, and furnace skimmings. The facility receives and processes scrap from various sources both internal and external to Pace Industries, which is the parent company of ARC. Aluminum processed at the facility is utilized internally at Pace facilities.

REGULATORY ANALYSIS

The facility holds one Permit to Install (PTI No. 340-07E) that covers one 80,000-pound holding capacity aluminum reverberatory furnace (EUALREVERB), one 20,000-pound holding capacity aluminum rotary furnace (EUROTARY), one 50,000-pound holding capacity aluminum reverberatory furnace (EUALREVERB50) and various space heaters (EUUTILITIES). EUALREVERB50 was removed from the facility in 2020.

The furnaces are subject to 40 CFR Part 63 Subpart RRR, Secondary Aluminum Production NESHAP. During the most recent compliance testing the 80k reverberatory and 20k rotary furnaces were operating.

COMPLIANCE EVALUATION

At the facility AQD staff consisting of Eric Grinstern (EG) met with Tony Trask, Plant Manager.

Additionally, a second onsite visit was conducted on February 9, 2022. The purpose of the second visit was to discuss the records provided following the first onsite inspection, as well as to review additional records. During the second visit, the facility was represented by Tony Trask and Bruce Bergeson, Consultant (via phone).

Below is an evaluation of the compliance requirements for each regulated emission unit, based upon Permit to Install No. 340-07E and the applicable NESHAP requirements.

EUUTILITIES

Restricts natural gas-fired space heaters to not exceed 10 MMBtu/hour.

During the inspection, staff did not observe any natural gas space heaters that appeared to exceed 10 MMBtu/hour.

FGFURANCES

Flex group includes all three of the aluminum melting furnaces and the lime and carbon injected baghouse. As noted earlier, the 50k reverb furnace has been removed. At the time of the inspection, the 80k reverb and 20k rotary furnaces were operating.

Emission/Material Limits/Records

Emissions of VE, PM, PM10, PM2.5, HCL, HF, Cl, and D/F are restricted under FGFURANCES. Compliance with the emissions limits is demonstrated through compliance testing, throughput limitations and baghouse monitoring.

The facility conducted compliance testing in October 2016. The test results demonstrated compliance with the permitted emission limits. The facility tested under two sets of conditions. Condition 1 maximized the aluminum production, under which the maximum amount of dioxin/furan emissions were expected. Condition 2 maximized the amount of reactive flux used, under which the maximum amount of HCL emissions were expected. Dioxin/furan was only sampled during Condition1 testing. The facility demonstrated compliance under all conditions.

Material throughput for aluminum melt and total reactive flux is limited within the permit. The facility is required to maintain, on a daily basis, a log of the hourly melt/throughput rate, a log of the feed/charge rate, types of material charged, individual flux charge rates, and chlorine injection rate for each furnace. The facility is also required to calculate and record the total weight of material charged to each emission unit in the SAPU for each 24-hour day of operation. Additionally, the facility is required to maintain records of total aluminum production in tons per 12-month rolling time period.

Total aluminum production is limited on a pound per hour basis in the permit to 11,600 pph, however, the permit allows for the facility to establish a new limit based on stack testing. During testing conducted in October 2016, the facility established a new charge limit of 12,380 pph. The facility also established a new total reactive flux injection rate. The permitted limit was 106.4 lb./chlorine/ton of charge. The rate established during testing was 288.3 lb. flux/ton of charge. Based on the chlorine content of the flux, the new limit is 144 lb./chlorine/ton charge. The facility previously used chlorine gas for fluxing, however they discontinued its use prior to performance testing and continue to only use granular flux.

Records (required by Condition VI.3 – daily records) for the following dates were requested (September 27, October 11, October 22, November 1, November 12, and November 18, 2021). Additionally, records were reviewed during the follow-up onsite visit on February 9, 2022. The facility provided the 2Q-2021 Production/Flux report, as well as October 2021 Production/Flux report. The records provide the hours of operation for the furnaces on a daily total basis and three-hour block. The records also document the furnace feed/charge rate on a daily and three-hour block, combined and for each individual furnace. Flux usage is documented for each individual furnace and combined.

Review of the records showed compliance with the charge rate for the operating cycling during performance testing (3-hours), except for one 3-hour period for flux and one 3-hour period of charge. On May 11, 2021 (9:00-11:59 pm), the hourly total reactive flux (Cl) lbs./ ton charged was 683 lbs./ton, which exceeds the 144 lb./ton of charge limit. On May 12, 2021 (12:00 - 3:00 am) the hourly charge rate was 15,845 pounds per hour, which exceeds the established limit of 12,380 pph. The facility determined that the recorded exceedances were the result of data entry error. The recorded reactive flux exceedance resulted from flux usage in the large reverb being erroneously recorded as 12,080 pounds, as opposed to the correct amount of 1,280 pounds. The charge exceedance resulted from the charge weight being averaged over 2 hours as opposed to 3 hours. The facility provided updated records with the corrections, which document compliance with the limits.

Records (required by Condition VI.4 – 24-hour charge records) for the following dates were requested (September 27, October 11, October 22, November 1, November 12, and November 18, 2021). The facility provided the 2Q-2021 Production/Flux report, as well as October 2021 Production/Flux report. The facility provided 24-hour charge records for each individual furnace and for the combined total for the two furnaces. 24-hour charge records are used in determining the 3-day, 24-hour rolling average emissions of D/F for NESHAP compliance. The maximum 24-hour charge rate observed was 208,820 pounds (April 28, 2021)

Records (required by Condition VI.5 – monthly production records) for the previous 12 months were requested and provided by the facility. The 12-month rolling total ending in October 2021 was 14,451 tons, which is below the permitted limit of 55,800 tpy on a 12-month rolling average.

Process/Operational Restrictions/Records

Design/Equipment Parameters/Records

Requires the facility to operate under a current OM&M Plan. The facility has submitted and is operating under an approved OM&M Plan. The facility provided an updated OM&M Plan on September 28, 2021. The updated plan addressed changes to the baghouse to allow for automatic on-line cleaning.

FGFURNACES is required to have an installed and properly operate a lime and carbon injected baghouse system. The facility is controlling emission from FGFURNACES with a lime and carbon injection baghouse system. Both the lime and carbon injection systems were observed during the inspection. The baghouse is required to operate in accordance with an OM&M Plan. The facility has submitted and is operating with an OM&M Plan

The lime and carbon injection systems are required to operate in a manner that injects lime at a rate equal to or greater than necessary to achieve compliance with the hydrogen chloride limit, as determined during testing. During testing, the lime injection rate was established at 32.5 pounds per hour and the carbon injection rate was established at 6.0 pounds per hour. Since the operating cycle or time period used during the performance test was three hours, it appears that the lime and carbon injection rates are based on a three-hour average. During the inspection, observation of the lime injection system showed lime being fed into the duct to the baghouse. The control panel showed a setting of 15.0 Hz (auger speed), which is the same as the reading observed during the last inspection. The baghouse monitoring system readout showed 14.9 Hz compared to 15.2 Hz observed during the last inspection. The monitoring system readout had a feed rate of 38.4 pounds per hour (3-hour average), compared to 34.6 pph/3hr. ave., observed during the last inspection.

Observation of the carbon injection system showed carbon being fed to the duct work of the baghouse. The control panel showed a reading of 39.0 Hz (auger speed), compared to 32.0 Hz observed during the last inspection. The baghouse monitoring system readout showed a reading of 39.2 Hz, compared to 32.3 Hz observed during the last inspection. The 3-hour average feed rate was observed to be 6.3 lbs. per hour.

Both the lime and carbon injection systems are required to be equipped with a device to monitor and record the feed rates on a continuous basis. The systems are equipped with monitoring and recording devices.

Records (required by Condition VI.7) – continuous lime and carbon injection records were requested. Due to the volume of records associated with the recording of lime and carbon feed, staff requested a sampling of records (September 27, 2021, October 11, 2021, October 22, 2021, November 1, 2021, November 12, 2021, November 18, 2021). The facility continuously (every minute) records the lime and carbon injection rate via the weight scale and feed Hz. Due to the volume of records, the facility provided samples (screen shots) for each day that records were requested and recommended in-person review of the records.

Review of the provided records (graphs) showed periods where the three-hour average lime and carbon feed rates were below the established limits. During the second onsite visit the facility explained why the graphs showed drops in the three-hour average. Whenever the facility changes the lime/carbon supply bag there is a short period of time that the scale registers no lime. This results in a drop on both the 15-minute and 3-hour average graph readings. During the lime/carbon supply bag change there is still lime/carbon (~20 pounds) in the feeder, which continues to be supplied to the baghouse. If there is an instance where a supply bag change or repair takes longer than the residual feeder supply, the facility manually feeds lime/carbon. The facility weighs and documents the amount of lime/carbon that is manually fed. The facility has and continues investigating a means of correcting the above described issue with the records showing false periods where the three-hour averages are below the minimum feed rates.

Records (required by Condition VI.8 – maintenance records for lime feed system were requested for the following days, September 27, 2021, November 1, 2021, November 18, 2021. The facility provided copies of the MACT Baghouse Daily PM Check List for each of the days requested. The facility also provided the NESHAP Monthly Lime and Carbon Test Calculation Forms for September and October. The carbon test was reported to have a feed rate of 6.8 pounds per hour (September) and 10.4 pounds per hour (October and November). The lime test was reported to have a feed rate of 38.8 pounds per hour (September) and 148.8 pounds per hour (October and November). Staff inquired if the 148.8 pounds per hour test results were correct. The facility stated that they would review the data with the employee.

The facility is required to maintain a list of the current flux material used. Records (required by Condition VI.6 –flux SDS records) were requested and provided by the facility. The facility stated and provided an SDS showing that the same flux as was observed during previous inspections was still in use - Amcor A-538-2.

The baghouse is required (Condition VI.2) to be equipped with a device to monitor and record the pressure drop on a continuous basis. The facility has a device that continuously monitors and records the pressure drop. During the inspection the pressure drop reading was 5.09 inches, with a 15-minute average of 5.02" and a 3-hour average of 4.88". During stack testing the facility established a pressure drop range of 3-8 inches.

Pressure drop records were requested for the following days, September 27, 2021, October 11, 2021, October 22, 2021, November 1, 2021, November 18, 2021. The facility provided screenshots of the pressure drop readings for the requested dates. Additionally, more records were reviewed during the second onsite visit. Review of the records provided showed a couple of short term (up to 15 minutes) that the instantaneous pressure drop fell below 3 inches. These instances were associated with the cleaning of a baghouse cell. During the second onsite visit, similar instances were observed in the pressure drop records where the instantaneous pressure briefly fell below 3 inches after the cleaning of a cell. Additionally, review of the pressure drop records showed a few occurrences where the pressure drop exceeded 8". The facility believed that these occurrences were associated with a buildup of cake on the bags not being removed during a cell cleaning. The pressure drop graphs appear to support that being the cause since the pressure drop fell below 8 inches after a subsequent cell cleaning.

In accordance with Condition III.3., The facility is restricted to burning only pipeline quality natural gas. No other type of gas sources have been observed at the facility.

Testing/Sampling

Performance testing for FGFURNACES was required within 180 days of startup of EUROINARY. The facility tested in October 2016, which was within 180 days of startup. Test results demonstrated compliance with both the permit limits as well as the NESHAP limits. Additionally, testing to verify the lime and carbon injection rates was required within 180 days of the startup of EUROINARY. The injection rates were verified during the performance test.

Observations

Observation of the rotary furnace during the inspection showed good capture associated with the door during melting as well as tapping. Observation of the reverb furnace showed a small amount of emissions from the side well escaping capture by the hood during dross skimming. The facility explained that it was due to an opening in the refractory adjacent to the door. The opening was allowing heat to escape, which was pushing emissions from the side well past the hood. The refractory is scheduled to be repaired during the next furnace shutdown. Observation of the furnace

during the second onsite visit showed that the refractory had been repaired and there were no observed issues with fugitive emissions.

Observation of the baghouse showed no opacity and good housekeeping practices. The facility recently had the baghouse and all of the ductwork painted.

FGMACT-RRR

The two furnaces, EUALREVERB and EUROTARY are subject to the Secondary Aluminum Production NESHAP, Subpart RRR. The facility is an area source; therefore, the affected sources are only subject to emission limits for dioxin/furan. Additionally, the facility is subject to applicable process, operating, testing, and monitoring requirements.

Emission/Material Limits

The furnaces are subject to a dioxin/furan limit of 0.00021 grain per ton of feed/charge. The facility last tested the SAPU, which included the operation of EUALREVERB and EUROTARY, in October 2016. Dioxin/furan emissions were reported as 5.7×10^{-6} (demonstrating compliance with the NESHAP limit)

Process/Operational Restrictions/Design Parameters/Records

Subpart RRR requires that capture and collection systems meet specified standards. When the system was originally installed, the facility provided documentation of compliance with proper capture and collection standards. The facility is required to inspect the capture/collections and closed vent system at least once each calendar year in accordance with 40 CFR 63.1506(c), which is addressed below under Monitoring/Recordkeeping.

The facility is required to submit an OM&M plan for each subject emission unit. The facility submitted an OM&M plan within 90 days of conducting the required performance test. Additionally, the facility submitted an updated OM&M Plan on September 28, 2021.

The facility is required to install and operate a device to measure and record the weight of feed/charge for each operating cycle. The facility has installed a device to measure the feed charge for each cycle.

In accordance with Subpart RRR, the facility has installed a lime-injected baghouse that controls emissions from the affected furnaces. The baghouse is equipped with a bag leak detection system and a device that continuously monitors and records the baghouse inlet temperature.

Testing/Sampling

The facility conducted performance testing within 180 days of the installation of EUROTARY (the most recently installed furnace) to demonstrate compliance with the dioxin/furan limits, as required by Subpart RRR.

Monitoring/Recordkeeping

Summary of monitoring and recordkeeping requirements under Subpart RRR:

Bag leak detection system:

The baghouse is equipped with a bag leak detection system. The facility previously provided a written procedure for testing and establishing the set-point for the BLD system. The facility provided an annual BLD system review, dated November 2021. The review provided a summary of alarms, probe cleaning, alarm set point, etc. Also included was a summary of the BLD system verification test that is conducted annually. The facility purchased an upgraded probe that was scheduled to be installed during the December 2021 shutdown. The stated alarm set point is 350. The facility provided the CMS alarm reports for the 2021 second quarter. Review of the alarms showed six alarms for high particulate. All of the alarms were categorized as false alarms. A majority of the high particulate alarms occurred when the records noted that the furnaces were down.

Annual inspection of capture and collection system:

The facility started full auto cleaning operation of the baghouse in March 2021, subsequent to which they conducted flow testing in April 2021. The facility reported no significant change in total flow (62000 - 66000 cfh), relative to the baseline 2016 stack test. The facility provided a summary of the flow testing data, providing a comparison to past flow testing. The evaluation also states that they documented no changes to the hoods, ductwork, fan settings and controls. The facility is using Bergeson Technology Services to conduct the annual inspections.

Lime injection system:

Verification that the lime is always free-flowing is required. Records were requested for the following days, September 27, 2021, November 1, 2021, November 18, 2021. The facility provided copies of the MACT Baghouse Daily PM Check List (both day and night) for each of the days requested. The check lists document the facility provided records of the checks for lime flow, scale weight, and details of lime bag changes. The facility also provided copies of MACT Baghouse PM checks. The checks include Hz setting, lime flow, scale weight, blower, and auger operation. Additionally, during the inspection staff observed the continuous monitoring system that tracks feed Hz., supply scale weight, current feed rate, 15-minute and 3-hour average feed rate.

3-day, 24-hour rolling average emissions of D/F:

The intent of the 24-hour rolling average is to allow for averaging of multiple emission units within a SAPU. Since the facility tested and demonstrated compliance with both emission units in the SAPU operating at the same time, averaging does not appear to be necessary, or applicable. Subpart RRR contains an alternative under 63.1510(u) to demonstrate compliance based on each individual emission unit. This appears to be applicable based on the testing of the two furnaces operating simultaneously.

The facility did provide the 30 days (October 2021) of 3-day rolling average D/F emissions. All reviewed records documented compliance.

Baghouse inlet temperature:

The NESHAP requires the facility to maintain 15-minute and 3-hour block average baghouse inlet temperatures. The 3-hour block average inlet temperature is required to remain below the maximum temperature established during compliance testing, plus 25 degrees F. The maximum temperature for the inlet has been established at 212 degrees F. Due to the volume of records associated with the recording of the inlet temperature, staff requested a sampling of records (September 27, 2021, October 11, 2021, October 22, 2021, November 1, 2021, November 12, 2021, November 18, 2021). The facility provided samples of records documenting the continuous monitoring and recording of the inlet temperature. All reviewed records showed a 3-hour block average below 212 degrees F. The facility documented and reported one 3-hour block period where the temperature exceeded 212 degrees F. On July 7, 2021, the facility recorded that the temperature was greater than 212 degrees F for 4.1 hours. The one 3-hour average temperature exceedance event had an average temperature of 217 degrees F. The temperature exceedance event occurred during the start-up from the Fourth of July holiday when the plant was only working on dayshift due to manpower issues due to COVID 19. The facility documented the event in a SSMP Exceedance report. The exceedance was discovered during an internal CMS audit. The facility conducted additional training/adjustment of the flue setting for summer operations when running both furnaces. The facility appears to have taken appropriate actions to address the exceedance.

Total reactive flux usage records:

The facility is required to track and record flux usage to demonstrate compliance with the flux limit established during performance testing. Since the facility currently only adds solid flux intermittently, they record usage to document compliance during a 3-hour block time period. Performance testing established a flux usage limit of 288.3 pounds per ton of charge, which equated to 144 lbs. chlorine/ton of charge. The facility provided the 2Q-2021 Production/Flux report, as well as October 2021 Production/Flux report. Review of the records showed compliance with the flux usage limit for all but one three-hour block. As previously detailed in this report, on May 11, 2021, the facility records reported an exceedance of the flux usage limit. The facility determined that there was an entry error and provided

corrected records that demonstrated compliance.

Feed/charge records:

Records of the charge rate are required to demonstrate compliance with the maximum throughput rate established during compliance testing. The facility provided the 2Q-2021 Production/Flux report, as well as October 2021 Production/Flux report. Review of the records showed that on May 12, 2021 (12:00 - 3:00 am) the hourly charge rate was 15,845 pounds per hour, which exceeds the established limit of 12,380 pph. The charge exceedance resulted from the charge weight being averaged over 2 hours as opposed to 3 hours. The facility provided updated records with the correction, which demonstrated compliance.

Reports

The facility has submitted semiannual compliance reports, as required by Subpart RRR. Reported events for the first half of 2021 (1/1/2021 - 6/30/2021) included one low lime event and one low carbon event. It appears that the facility took proper action to address these events in accordance with the SSMP. The facility reported one high temperature event in the semiannual compliance report for 7/1/2021 - 12/31/2021). The facility documented that the event resulted in one 3-hour period that the temperature exceeded the baghouse temperature limit. The facility also reported that SSMP procedures were followed in response to the temperature exceedance. The facility submitted a complete MAERs report for 2020 on April 1, 2021.

FGFACILITY

FGFACILITY establishes opt-out limits for HAPs and requires records documenting compliance with the emission limits.

Records for 2016 until current were provided to document compliance with the 12-month rolling total HAP limit. Based on the records provided, the facility is below the single and aggregate HAP limits. The highest single HAP, HCL had a 12-month rolling total of 0.18 tons, for the 12-month period ending in October 2021. HF emissions were reported at 1.0 pounds, for the same time period.

Miscellaneous

Observation of the paved surface outside of the building showed good housekeeping and no issues with fugitive emissions.

During the inspection, uncovered bins of furnace skimming/dross were observed outside of the building. The facility places the bins outside to cool. The facility brings the bins inside to load them into roll-offs for shipping offsite. The facility stated that they are looking into a structure that will protect the bins from rain.

Conclusion

Based on the information obtained and observations made through this inspection, the facility appears to be in compliance with applicable air quality rules and regulations.

Records attached.

NAME Eric Grinstern

DATE 02/16/2022

SUPERVISOR HH