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

N788872176

FACILITY: ALLOY RESOURCE CORPORATION		**SRN / ID:** N7888
LOCATION: 2281 PORT CITY BLVD, MUSKEGON		**DISTRICT:** Grand Rapids
CITY: MUSKEGON		**COUNTY:** MUSKEGON
CONTACT: Mike Harman , Operations Manager		**ACTIVITY DATE:** 06/05/2024
STAFF: Eric Grinstern	**COMPLIANCE STATUS:** Non Compliance	**SOURCE CLASS:** SM OPT OUT
SUBJECT: Unannounced compliance inspection		
RESOLVED COMPLAINTS:		

ARC

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 dross. 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 the area source requirements of 40 CFR Part 63 Subpart RRR, Secondary Aluminum Production NESHAP.

COMPLIANCE EVALUATION

Onsite inspections were conducted on June 5, 2024, and July 30, 2024.

Prior to entering the facility an evaluation was conducted for odors and VE. While approaching the facility from the public roadway, AQD staff saw what they thought was fog, however, it was fugitive emissions from the facility. Fugitive emissions were observed from multiple locations around the facility building. While observing the building emissions, AQD staff observed a large amount of fugitive dust from the loading of a semi-trailer located on the facility's scale. It was subsequently determined that the fugitive emissions were from the dumping of salt cake from totes into the semi-trailer. During the July 30, 2024, visit, staff observed fugitive emissions from the facility building. Observed fugitive emissions were less than the previous visit. Staff also observed fugitive emissions from the loading of salt cake into a roll-off bin. The facility subsequently stated that they attempted to load salt cake indoors, however, the dust filled the building.

Upon entering the office area of the facility, a fog-like haze was observed.

At the facility AQD staff consisting of Eric Grinstern (EG) met with Mike Harman, Operations Manager, and John Kinart, Plant Manager.

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.

FGFURNACES

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 emission 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.

Visible emissions are limited to 10%. During the inspection, observation of the baghouse stack showed no visible emissions. However, fugitive emissions resulting from FGFURNACES were observed being emitted from several vents and building openings that exceeded 10% opacity. During the follow-up inspection conducted on July 30, 2024, visible emissions were observed exiting the building openings. The visible emissions observed were less than observed during the June 5, 2024, visit. The facility stated that they discovered a hole in the furnace duct work after the June 5, 2024, inspection. The facility shutdown and repaired the duct work. During both inspections, nearly the entire plant was observed to be filled with smoke from the ceiling to almost the floor.

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 previous 30-days were requested, the facility provided records for the previous 5 months. 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 cycle during performance testing (3-hours). All reviewed days showed compliance with the 12,380 lb./hr. limit. The records also showed compliance with the 288.3 lbs./ton of charge limit for flux usage, based on a 3-hour block average.

Records (required by Condition VI.4 – 24-hour charge records) for the previous 30-days were requested, the facility provided records for the previous 5 months. 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.

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 May 2024 was 18,146 tons, which is below the permitted limit of 55,800 tpy on a 12-month rolling time period.

Process/Operational Restrictions/Records and

Design/Equipment Parameters/Records

Requires the facility to operate under a SSMP. The facility has submitted and is operating under a SSMP that was submitted on March 19, 2013. The SSMP requires as part of the "Duct Collector Pre-Start Inspection": "Inspect housing and ductwork carefully making sure all joints are tight ad leak free". As observed during the inspection, the ductwork hood over the rotary furnace had a large gap due to the deterioration of the curtain. The gap was observed to be a source of a large amount of fugitive emissions. The facility was therefore not operating FGFURNACES in accordance with the SSMP. On the July 30, 2024, inspection the curtain was observed to be repaired.

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. The OM&M Plan, 2.6. Side Curtains – Charge Well, requires: Visually check condition of curtains when charging, Stop/slow charging if smoke escaping hood is observed. During the inspection, smoke was observed escaping the charge well hood. There was no indication of stopping or slowing charging. The facility is therefore not operating FGFURNACES in accordance with the OM&M Plan.

FGFURNACES is required to have an installed and properly operating lime and carbon injected baghouse system. The facility is controlling emissions from FGFURNACES with a lime and carbon injected baghouse system. 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 baghouse monitoring system readout showed a reading of 15.8 Hz (auger speed), which is slightly higher than the reading observed during the last inspection (15.0 Hz). The baghouse monitoring system readout had a feed rate of 36.2 pounds per hour (3-hour average). Observation of the baghouse monitoring system readout showed carbon being fed to the duct work of the baghouse. The baghouse monitoring system readout showed a reading of 40.1 Hz (auger speed), compared to 39.0 Hz observed during the last inspection. The 3-hour average feed rate was observed to be 7.4 lbs. per hour.

Lime and carbon injection records were observed during the July 30, 2024, visit. Review of the recent records (graphs) showed periods where the three-hour average carbon feed rate was below the established limit (6.0 pph) during the months of May, June and July 2024.

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 records for the seven days prior to the inspection. The facility continuously (every minute) records the lime and carbon injection rate via the weight scale and feed Hz. The facility provided sample records and requested EG view the records onsite due to the volume of records.

Lime and carbon injection records were observed during the July 30, 2024, visit. The facility is maintaining the required records. Review of the recent records (graphs) showed periods where the three-hour average carbon feed rate was below the established limit (6.0 pph) during the months of May, June and July 2024.

Records (required by Condition VI.8 – maintenance records for lime feed system were requested for the previous 30 days. The facility provided sample copies of the MACT Baghouse Daily PM Check List and requested that additional records be reviewed onsite. Staff reviewed additional records during the July 30, 2024, visit.

The facility is required to maintain a current listing from the manufacture of the chemical composition of each flux material used. The facility responded that they have not changed the flux used from previous years. The facility provided a copy of the SDS from the vendor for the flux used (AMCOR Aluminum Fluoride)

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 4.44 inches, with a 15-minute average of 4.94" and a 3-hour average of 5.03". During stack testing the facility established a pressure drop range of 3-8 inches.

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

Testing/Sampling

Performance testing for FGFURNACES was required within 180 days of startup of EUROTARY. 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 EUROTARY. The injection rates were verified during the performance test.

Observations

Observation of the rotary furnace during the inspection showed very poor capture associated with a large gap in the rear of the hood where a curtain had deteriorated. Observation of the reverb furnace showed visible emissions from the side well where emissions were overwhelming the hood and venting into the in-plant atmosphere and subsequently to the outside via vents and building openings. The in-plant environment was filled with smoke during the inspection.

Observation of the baghouse showed no opacity. A small amount of collected particulate was observed on the ground near the baghouse discharge area.

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 5.7x10-6 (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 install, operate, and maintain a capture/collection system for each affected source. During the inspection EG observed visible emissions from both the reverberatory (EUALREVERB) and rotary (EUROTARY) furnaces. Visible emissions were observed from the side-well of the reverberatory furnace, escaping around the hood. Additionally, visible emissions were observed from the rotary furnace, primarily escaping from the rear portion of the hood where a section of curtain adjacent to the rotary furnace was warn away. The fugitive emissions filled the entire facility and were observed being emitted from vents and building openings throughout the

facility. The furnace emissions are the source of the visible emissions that EG observed prior to entering the facility. During the inspection it was observed that the facility had not maintained the capture/collection system based on the observed fugitive visible emissions. Subpart RRR (40 CFR 63.1506(c)(3)) requires the owner to operate each capture/collection system according to the procedures and requirements in the OM&M Plan. The OM&M Plan, 2.6. Side Curtains – Charge Well, requires: Visually check condition of curtains when charging, Stop/slow charging if smoke escaping hood is observed. During the inspection, smoke was observed escaping the charge well hood. There was no indication of stopping or slowing charging. The facility is therefore not operating FGFURNACES in accordance with the OM&M Plan. On the July 30, 2024, visit, the curtain was observed to have been repaired.

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 provided an "Annual BBD + CMS System Review, dated December 2023. The document includes a summary of actions taken, including flow testing (September 2023), verification of no changes to hoods, ductwork, fan settings or controls (July 2023).

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

<u>Summary of monitoring and recordkeeping requirements under Subpart RRR:</u>

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 December 2023. The facility also provided the ARC Baghouse Continuous Monitoring System Overview. The review provided a summary of probe cleaning, alarm set point, etc. Also included was a summary of the BLD system verification test that is conducted annually. The stated alarm set point is 350. During the inspection the BLD reading was 2.0 pA. The facility provided the SSMP malfunction event log for December 2023 to June 2024. The log documented one "close call" associated with the BLD system. On 1/21/2024, the facility logged the following "Particulate alarms during start-up from a long weekend and frozen air lines. Corrected with -in an hour using extra manual cleans. No excess emissions." The event was documented as lasting 1.5 hours.

Annual inspection of capture and collection system:

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 provided an "Annual BBD + CMS System Review, dated December 2023. The document includes a summary of actions taken, including flow testing (September 2023), verification of no changes to hoods, ductwork, fan settings or controls (July 2023).

Lime injection system:

Verification that the lime is always free flowing is required. Records were requested for the previous 30 days. The facility provided sample records and requested review of the records onsite. EG reviewed additional records during the July 30, 2024, visit. 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 and 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 provided requested 3-day rolling average D/F emission records for May 2024. 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. All reviewed records showed a 3-hour block average below 212 degrees F. At the time of the inspection the baghouse temperature was 159 degrees R. The facility provided an SSMP record regarding the baghouse temperature on January 17, 2024. The facility documented a "close call" The facility documented a high temperature warning at 8:30 pm. The facility stopped charging per the SSMP until the 15-minute average was below the limit. The facility documented the duration of the event as 30 minutes. Appears that the 3-hour temperature limit was not exceeded due to facility response. During the July 30, 2024, visit, the inlet temperature records for the past several months were reviewed. No temperature exceedances were observed.

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. Records for the previous 30-days were requested, the facility provided records for the previous 5 months. 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.

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 feed/charge records for the previous 5 months. Review of the records showed compliance with the charge rate for the operating cycle during performance testing (3-hours). All reviewed days showed compliance with the 12,380 lb./hr. limit.

Reports

The facility has submitted semiannual compliance reports, as required by Subpart RRR. The facility submitted a complete MAERs report for 2023 on March 9, 2024.

FGFACILITY

FGFACILTY 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 0.15 tons, for the 12-month period ending in May 2024. HF emissions were reported at 0.9 pounds, for the same time period.

July 30, 2024, onsite inspection

On July 30, 2024, a follow-up onsite inspection was conducted to further evaluate baghouse inlet temperature, lime injection and carbon injection records. A facility tour was also conducted to evaluate process operations and emissions. During the July 30, 2024, visit, EG was accompanied by Mike Harman.

Miscellaneous

Saltcake Handling

During both the June 5, 2024, and July 30, 2024, visits, EG observed large amounts of fugitive dust resulting from the loading out of saltcake associated with the rotary furnace. The handling of salt cake from the rotary furnace and the resulting emissions is not an emission unit that has been evaluated or permitted. Review of other secondary aluminum processing facilities that operate rotary furnaces show that saltcake handling is contained in the permits as a separate emission unit with established emission limits and operating requirements. Therefore, the handling of saltcake at ARC is an unpermitted emission unit that is in violation of Rule 201.

Conclusion

Based on the information obtained and observations made through the inspections, the facility appears to be in compliance with applicable air quality rules and regulations, except for the following:

FGFURNACES SC I.1. – Exceedance of the visible emissions limit of 10% opacity. Fugitive emissions observed being emitted from multiple building openings.

FGFURNACES SC IV. 1. & FGMACT-RRR III.1.c. – Failure to operate and maintain baghouse in accordance with the OM&M Plan and SS&M Plan. Operation of the rotary furnace while there was a large gap in the hood/ductwork due to the deterioration of the curtain, resulting in fugitive emissions. Operation of the reverberatory furnace while a large amount of emissions were observed escaping the hooding associated with the charge well. There was no indication of slowing or stopping charging to reduce the amount of emissions circumventing the capture hood.

FGFURNACES SC IV.2 – Failure to maintain the 3-hour average carbon injection rate equal to or greater than the rate established during stack testing. Review of the recent records (graphs) showed periods where the three-hour average carbon feed rate was below the established limit (6.0 pph) during the months of May, June and July 2024.

Saltcake Handling - Rule 201 - Failure to obtain a permit to install

A Violation Notice will be issued to address the above listed violations.

Records attached.

NAME Eric Grinstern DATE 08/12/2024 SUPERVISOR HH