



REGION 3

PHILADELPHIA, PA 19103

Report Title: Clean Air Act Inspection of Vibrantz Technologies
Inspection Date(s): 11/02/2023
Regulatory Program(s): SIP, Title V, NSPS, MACT

Company Name: Vibrantz Technologies
Facility Name: Vibrantz Technologies
Facility Location: 610 Pittman Road
Curtis Bay, MD 21226

Latitude: 39.19469 **Longitude:** -76.56416
County/Parish: Anne Arundel

AFS/ICIS-Air Number: MD0000002400300056
Permit Number: 24-003-0056
NAICS Code: 212299 **SIC:** 2819
Unique Project #: ECAD-140

Facility Representatives:	Point of Contact
Michael Martinko, Plant HSE Manager	☒
Phone: 410-279-8282 Email: michael.martinko@vibrantz.com	
Doug Crawford, Plant Manager	☐
Phone: 443-910-8341 Email: doug.crawford@vibrantz.com	

EPA Inspectors:
Bruce Augustine, Environmental Scientist, 3ED21
Phone: 215-814-2131 Email: augustine.bruce@epa.gov
Carly Joseph, Inspector, 3ED21
Phone: 215-814-2127 Email: joseph.carly@epa.gov

State/Local Inspectors:
Roland Gorschboth, MDE Air Quality
Phone: 413-537-4130 Email: roland.gorschboth@maryland.gov

Unique Project #: ECAD-140

EPA Lead Inspector

Signature

Bruce Augustine
1600 John F Kennedy Blvd
Philadelphia, PA 19103-2852

Date

Supervisor

Signature

Kristen Hall

Date

Table of Contents

I. Introduction	4
A. Summary of the Facility.....	4
B. Inspection Opening Conference.....	4
II. Site Activity/Process Description	5
III. Observations	6
IV. Records Review	7
V. Closing Conference	9
VI. List of Attachments	11

I. Introduction

The United States Environmental Protection Agency (EPA) conducted a Clean Air Act (CAA) inspection at Vibrantz Technologies (Vibrantz or Facility) to verify compliance with applicable State and Federal regulations. The Maryland Department of the was notified of the inspection on October 17, 2023, via email. On October 31, 2023, EPA notified the Facility of the planned inspection via phone and email. EPA emailed a list of records for review to Michael Martinko, prior to the inspection (see Attachment 1). These records are listed in the Records Review section of the report.

The inspection included an evaluation of the Facility's processes and its compliance with the CAA. All information included in this report is the result of statements by the Facility representatives, materials shown to the inspectors by the Facility representatives, and/or documents provided by the Facility representatives to the inspectors at the time of, or subsequent to, the inspection. In addition, information gathered prior to the inspection from a review of EPA and State records may be included in Section A. Summary of the Facility.

A. Summary of the Facility

The Facility is located at 610 Pittman Road, Curtis Bay, MD 21226. The facility processes raw manganese ore through several processes to produce intermediate pigments and chemicals for use in various applications such as paint and battery manufacturing. Vibrantz is an international corporation with locations worldwide (www.vibrantz.com). Vibrantz lists several NAICS codes (212299, 325131, 325180, and 325199) and SIC code 2819.

The Facility received a Title V permit (24-003-0056) from MDE issued on September 14, 2022.

Vibrantz is classified as major source for HAP, CO and NO_x and a minor source for all other criteria pollutants. The threshold for a major source for NO_x in Anne Arundel County is 25 ton/yr and 100 ton/yr for all other criteria pollutants. The Facility is subject to, or potentially subject to the following federal regulations:

- 40 C.F.R. Part 60, Subpart Dc: Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units
- 40 C.F.R. Part 63, Subpart DDDDD: National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Industrial Boilers and Process Heaters
- 40 C.F.R. Part 63, Subpart ZZZZ: National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

B. Inspection Opening Conference

At 8:25AM on November 2, 2023, EPA inspectors arrived at the Facility for a CAA Inspection and conducted a brief opening conference. Vibrantz was represented by Michael Martinko and Doug Crawford. Also, Roland Gorschboth MDE was present. EPA inspectors, Bruce Augustine and Carly Joseph, presented their credentials and explained the purpose of the visit was to conduct a CAA

inspection to determine compliance with their permit and any applicable regulations. Additionally, EPA informed the facility representatives of their right to claim any confidential business information (CBI). At that time, Vibrantz did not claim any photos or documentation as CBI.

II. Site Activity/Process Description

Vibrantz Technologies acquired the Curtis Bay Site in April 2022 when it procured Prince Specialty Chemical, who owned the site at that time. At the same time, Vibrantz also acquired Ferro and Chromaflo chemicals. Prince had acquired the site from Erachem in 2010. The site has operated as a manufacturing site for more than 50 years. And is approximately 62 acres. Vibrantz has over 5,000 employees worldwide while there are about 60 people at the Curtis Bay site. The Facility operates two production shifts and operates 24 hours/7 days per week. Mr. Martinko stated that there isn't a specific period where the plant shuts down for planned maintenance, however, annual maintenance on process units is usually conducted between October-November each year process unit by process unit. During the inspection, the roaster and nitrate processes are undergoing maintenance.

Twice each year, Vibrantz receives a shipment of Manganese Ore (MnO_2) from Africa by ship. Each shipment is millions of pounds of raw ore that is used for processing. The first part of the process involves reducing the manganese ore from MnO_2 to MnO in a shaft furnace. The shaft furnace is charged with raw manganese ore and a nickel catalyst is added with H_2 that has been cracked in a gas cracker to facilitate the reaction. The shaft furnace has a capacity of 23,500 metric tons/yr and is fired with natural gas. Emissions from the shaft furnace are controlled with a baghouse. After going through the shaft furnace, the material is cooled and goes to a ball mill for milling. At this point the MnO can be shipped out as a bulk product in a railcar or truck, bagged and sold as product, or sent to other parts of the plant for further processing.

The MnO high purity process is another process that uses raw manganese ore. This process has a capacity of 3,100 metric ton/year. The ore is sent to leaching tanks where water and nitric acid are added, as well as NO_2 gas from another point in the process. Prior to the leachate step, Vibrantz adds a Manganese Oxide (Mn_3O_4) that is received from various suppliers in bulk shipment or super sacs. From the leachate tanks, the material is treated with MnO that has already been reduced at the shaft furnace. Some of the material from the leachate process is denitrified and sold as an agricultural grade nitrate solution. After treatment, the material is filtered and then water is driven off before finally going to the decomposition step which generates the NO_2 used in the leachate step. After decomposition, Vibrantz uses this product as very high purity MnO_2 for sale or sends some of the product to a reduction step which produces the high purity MnO_2 .

Mr. Martinko went on to describe the chloride process that uses the reduced MnO ore from the shaft furnace to produce either Manganese chloride prills or flakes. Manganese chloride flake production has a capacity of 5,000 metric ton/year. The chloride process has operated infrequently in the past year and last operated approximately May 2023. The chloride process operates minimal one week

campaigns as needed based on customer demand. The chloride process is similar to the high purity process except it utilizes hydrochloric acid (HCl) instead of nitric acid in the leaching step.

Vibrantz described another process called Manganese carbonate ultra fine (MnCO_3 UF) that produced a high surface area catalyst for one of their customers. This product starts with high purity MnO and reacts it with CO_2 in water to produce a reaction. Vibrantz went on to state that this process hasn't operated since 2018.

EPA and Vibrantz discussed one final process: Specialty Chemical or Salt Plant. This process also begins with high purity MnO that is reacted with nitric acid. The pH is controlled and excess water is evaporated before being filtered. This product is packaged in 2.5 gallon jugs for sale.

Other than the shaft furnace, Vibrantz operates two additional large combustion sources. A primary boiler rated at 40MMBtu/hr and a backup boiler rated at 29MMBtu/hr. The boilers are used to produce process heat and steam. Both boilers combust natural gas as the primary fuel with #2 fuel oil as the backup. Since the Facility is a major source of HAP emissions, both boilers are subject to 40 C.F.R. Part 63, Subpart DDDDD. Both boilers are rated at greater than 10MMBtu/hr but less than 100MMBtu/hr, however, the primary boiler was constructed prior to 1989 while the backup boiler was constructed in 1994. Therefore, the backup boiler is subject to the regulations at 40 C.F.R. Part 60, Subpart Dc.

The opening conference concluded at 10:18AM.

III. Observations

EPA inspectors were led on a walkthrough of the Facility at 10:32AM by Michael Martinko of Vibrantz and Roland Gorschboth of MDE was also present for the walkthrough. EPA inspectors noted photos would be taken during the Facility walkthrough (Attachment 2).

The walkthrough commenced at the raw Magnesium ore storage piles. Several large, uncovered piles were observed. Adjacent to the storage area EPA inspectors noticed the RCRA hazardous waste storage area. Mr. Martinko stated that Vibrantz is a large quantity generator and stores material for up to 90 days prior to disposal. A drum labeled barium nitrate was observed in the locked area. The drum label did not have a date of waste generation.

The EPA inspection team observed a front end loader moving raw MnO_2 ore from a small pile to the shaft furnace for processing. The shaft furnace was operating during the inspection and the inspection team climbed the shaft furnace tower. The shaft furnace was operating at a rate of 1.8 metric ton/hr during the inspection. The finish ball mill was also observed which reduces the size of the cooled Manganese ore that has been reduced in the furnace. The pressure drop across the ball mill baghouse was 2.7" water column.

The two process boilers were observed in a building. The primary boiler was operating during the inspection and is a Cleaver Brooks boiler rated at 40.92MMBtu/hr. The backup boiler is also a Cleaver

Brooks boiler and is rated at 29.29MMBtu/hr. The backup boiler was not operating during the inspection. EPA also observed a GM emergency generator in one building. The generator is rated at 245kW and Vibrantz personnel were unsure of the last time it operated and what its periodic operating schedule might be. EPA observed that the meter on Set 1 was 749 hours while on Set 2 it was 332 hours.

The EPA inspection team then proceeded to the high purity processing area. The high purity process uses multiple scrubbers to control HAP emissions from the process. These include the chemical scrubber, leachate scrubber, and treatment scrubber. The inspection team observed the leachate tanks and associated scrubber. The scrubber was not operating during the inspection. EPA observed the treatment tank scrubber and the packed tower flow rate during the inspection was 10.8gpm.

The Manganese carbonate plant was also observed. It was not operating during the inspection. The EPA inspection team then proceeded to the specialty chemical plant. In this plant, high purity MnO is dissolved in nitric acid then filtered and pH is corrected to approximately 5. According to Vibrantz, no emission controls are used in this area.

EPA observed a small Generac natural gas generator adjacent to the office building. Vibrantz stated that it was used for emergency backup of the computer systems in case of the loss of power. No hour meter was observed on the generator.

The walkthrough concluded at 12:50PM.

IV. Records Review

After the facility walkthrough, the inspection team broke for lunch and the inspection resumed at 1:47PM for the record review. EPA inspectors discussed and reviewed documents requested in the October 31, 2023, email to Mr. Martinko (see Attachment 1). Records were provided at the time of the inspection by Mr. Martinko and he agreed to provide the remainder of the documents requested via EPA's secure file sharing site. Below are the records requested and what was provided (in bold type):

1. Provide a plot plan of the facility that clearly delineates each process unit and emission point listed in the Title V permit. **Vibrantz provided a paper copy of the facility plot plan during the inspection and an electronic copy via secure file sharing site on 11/10/2023 and 11/14/23.**
2. Provide a detailed description of the process(es) which are conducted at the facility. This should include a description beginning from raw material delivery to final product shipping. **Vibrantz provided paper copies of the process flowcharts for the Manganese ore reduction process, the MnO high purity process and the chloride production process during the inspection. Vibrantz also provided electronic copies of the flowcharts to EPA via secure file sharing site on 11/10/23 and 11/14/23.**
3. Provide copies of annual emissions statements submitted to MDE for the years 2020-2022. If not already included in the submittals to MDE, please include the emissions of each pollutant (PM, SO₂, NO_x, VOC) and hazardous air pollutant for each emission point. This submittal should also include the calculation or methodology used to calculate emissions and the emission factors used for each year. **Vibrantz provided for review copies of the 2020-2022 emission statements submitted to MDE. EPA reviewed the emission statements and in 2022, Vibrantz reported 29 tons of NO_x emissions. EPA requested Vibrantz provide detailed emission statements that include the calculations. Via a secure file sharing**

site on 11/10/23 and 11/14/23, Vibrantz provided a copy of the calendar year 2022 emission statement. However, Vibrantz did not provide copies of the emission statements for 2020 or 2021.

4. For each boiler, engine, furnace, or generator in place at the facility, provide the following information:
 - a. Make and model; . **Vibrantz provided pictures of the boiler plates and boiler logs for review.**
 - b. Year constructed;
 - c. Appropriate heat input or rating (MMBtu/hr, kW, HP, etc.);
 - d. Fuels combusted (natural gas, fuel oil, etc.);
 - e. Monthly hours of operation from January 2020 to the present; **While reviewing the records, it was evident that the backup boiler hourly logs do not match the hours of operation reported on the annual emission statements. One of the boiler operators was called into the conference room and he indicated that he records hours each day. However, if he is not onsite the hours are not recorded.**
 - f. Monthly fuel use (gallons, MMscf, etc.) from January 2020 to the present;
 - g. Copies of all visible emission monitoring records from January 2022 to the present; **EPA reviewed portions of visible emission monitoring logs.**
 - h. Copies of each energy assessment conducted pursuant to 40 C.F.R. Part 63 Subpart DDDDD (MACT 5D); **Vibrantz indicated during the review that the energy assessment was trying to be located.**
 - i. Copies of each tune-up conducted pursuant to MACT 5D. **Records of tune-ups were reviewed by Carly Joseph.**

Post inspection, Vibrantz provided copies of the following records via secure file sharing site on 11/10/23 and 11/14/23:

Title V utility logs Jan 2020-Sep 2023

Boiler Environmental log from Jan 2020-Sep 2023

Fire tube boiler log Jan 2020-Sep 2023

Water tube boiler log Jan 2020-Sep 2023

5. Provide copies of initial notifications, semiannual, and annual reports submitted to EPA or MDE for 40 C.F.R. Part 60 Subpart Dc (NSPS Dc) and MACT 5D from January 2020 to the present. **During the inspection, Vibrantz furnished for review copies of MACT Subpart 5D reports and some NSPS Dc reports. After the inspection, Vibrantz provided, via secure file sharing site on 11/10/23 and 11/14/23, MACT 5D annual compliance reports for 2020-2023 and NSPS Dc semiannual reports for 2020 and 2021. No reports were provided for 2022 or 2023.**
6. For the magnesium ore reduction process bulk load baghouse, provide the following records:
 - a. Daily visible emission monitoring records for January 2023 to the present;
 - b. Pressure drop monitoring records for January 2023 to the present. **Vibrantz indicated they were going to provide the first shift shaft furnace baghouse logs. After inspection, via secure file sharing site on 11/10/23 and 11/14/23, Vibrantz provided intermittent copies of the Magnesium ore bulk loading baghouse monitoring records.**
7. Visible emission monitoring records for emission points EP7-0403A and EP7-0403B at the magnesium chloride solution process from January 2023 to the present. **During the inspection, Vibrantz indicated that they were trying to locate these records and would provide them at a later date. After the inspection, via a secure file sharing site on 11/10/23 and 11/14/23, Vibrantz stated that they did not have records of visible monitoring records for January 2023-July 2023. They corrected the monitoring deficiency and provided records from August-October 2023. For both emission points.**
8. For the multipurpose plant, provide the following records:

- a. Daily visible emission monitoring records for the scrubber (EP7-404D) and the baghouses (EP7-404B&C) from January 2023 to the present;
 - b. Scrubber solution flow rate (gpm) and scrubbing solution pH for EP7-404D;
 - c. Baghouse EP7-404C) pressure drop monitoring records from January 2023 to the present.
Vibrantz stated that they do not have monitoring records for scrubber EP7-404D and baghouse EP7-404B because these sources have not operated in 2023. After the inspection, via a secure file sharing site on 11/10/23 and 11/14/23, Vibrantz provided monitoring logs for baghouse EP7-404C for the period of time it operated in May 2023.
9. For the manganese chloride prilling process, provide the following records from January 2023 to the present:
- a. Pressure drop and scrubbing solution flow rate (gpm) for scrubber EP7-407A;
 - b. Scrubbing solution flow rate (gpm) and pH for scrubber EP7-407B. **Vibrantz reiterated during the record review that the multipurpose plant has not operated since 2018 and no records are available.**
10. For the high purity manganese oxide process, provide the following records:
- a. Visible emission monitoring records from dust collectors EP7-408B, D, F, I G, H from January 2023 to the present; **After the inspection, via a secure file sharing site on 11/10/23 and 11/14/23, Vibrantz provided visible emission monitoring logs for EP7-408D, G, H , and I.**
 - b. Pressure drop monitoring records for baghouse EP7-408B, D, F from January 2023 to the present; **After the inspection, via a secure file sharing site on 11/10/23 and 11/14/23, Vibrantz provided pressure drop monitoring records for EP7-408B, I and F. These records are still under review.**
11. For the manganese chloride flakes process, provide the following records:
- a. Copies of any stack tests conducted for particulate matter, manganese, and visible emissions from 2010 to the present; **Vibrantz provided a copy of a stack test during the record review. Following the inspection, Vibrantz provided copies of stack tests conducted in 2012, 2017 and 2022 via a secure file sharing site on 11/10/23 and 11/14/23. These tests are still under review by EPA.**
 - b. Daily pressure drop records and scrubbing solution flow rate (gpm) for venturi scrubber EP7-410A. **Following the inspection, Vibrantz provided via secure file sharing site, scrubber flow rate and pressure drop monitoring records for three dates in 2023. These records were submitted to EPA on 11/10/23 and 11/14/23.**

V. Closing Conference

Commencing at 4:05PM and immediately following the records review, EPA inspectors, Bruce Augustine and Carly Joseph of EPA Region 3 and Roland Gorschboth of MDE had a brief closing conference to ask additional questions and discuss observations. The EPA inspectors noted that the investigation is on-going, and any areas of concern identified in the final report do not necessarily reflect a violation or deviation, rather, they are areas that will require further investigation. EPA also noted that they would issue an inspection report within in 60 days, with a copy to the State. Simultaneously, EPA will perform a detailed review of records and may have additional questions. The inspection concluded at 4:24PM.

The following have been identified as potential issues during the inspection. They are issues that require either further investigation by EPA or additional information or explanation by Vibrantz.

- It is not clear if the emergency generators onsite are being monitored for hours operated and what records are being maintained pursuant to 40 C.F.R. Part 63, Subpart ZZZZ. One of the generators is included in the Title V permit as an insignificant source while the other generator is not listed in the permit at all. These are combustion sources that are not limited in their operation in the Title V permit and could potentially operate as needed by Vibrantz. These sources combust natural gas and are potentially subject to 40 C.F.R. Part 60 Subpart IIII and 40 C.F.R. Part 63, Subpart ZZZZ. There are applicable requirements for these regulations and the compliance status should be determined.
- A drum was observed located in the hazardous waste accumulation area that was not properly labeled. Any hazardous waste stored in accumulation areas need to be labeled with the date the waste was placed there.
- During the record review, Vibrantz stated that they could not locate visible emission monitoring records for the HCl holding tanks at emission point EP7-403A and EP7-403B. After the inspection, Vibrantz stated that monitoring records for January -July 2023 were not available and they provided monitoring records commencing in August 2023. It appears that Vibrantz may not have been conducting this monitoring as required by Table IV-7 7.3.A of the Title V permit.
- During records review of boiler logs, EPA noted a discrepancy of the hours of operation for the boilers between the emission statements and the boiler logs maintained onsite. The method of recording daily hours of operation and fuel use for each boiler was not clear and may not reflect actual operation.
- Vibrantz agreed to provide the additional records that were discussed during the record review: Date of catalyst change in the furnace, the amount of Manganese ore received in 2022-2023, and the amount of sulfuric, nitric, and hydrochloric acid delivered in 2022 and 2023.

Unique Project #: ECAD-140

VI. List of Attachments

- Attachment 1: Email correspondence to Michael Martinko of records requested to review during inspection
- Attachment 2: Photo Log