

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

B735763952

FACILITY: TEMPERFORM LLC		SRN / ID: B7357
LOCATION: 25425 TRANS X, NOVI		DISTRICT: Warren
CITY: NOVI		COUNTY: OAKLAND
CONTACT: Gloria Webber , General Manager		ACTIVITY DATE: 08/04/2022
STAFF: Eric Grinstern	COMPLIANCE STATUS: Non Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: On-site compliance inspection, Foundry EJ Initiative		
RESOLVED COMPLAINTS:		

On-site inspection of Temperform. The facility was targeted for inspection in FY 22 under the statewide initiative evaluating secondary metal processing facilities located in Environmental Justice (EJ) areas. The facility is located in an EJ area using EPA EJSCREEN, based on the population within a one-mile radius of the facility having a Population of Color and Linguistically Isolated at or above the 75th percentile on a state-wide basis. An on-site inspection was conducted because the facility has a history of odor complaints. AQD received and logged 75 odor complaints associated with the facility in the last five years.

Prior to entering the facility, a survey of the area near the facility was made from the public roadway. A slight intermittent phenolic urethane binder odor was observed while adjacent to the facility on Trans-X Road. No visible emissions were observed to be resulting from Temperform.

FACILITY DESCRIPTION

The facility manufactures heat, corrosion and abrasive resistant steel and stainless-steel castings. The facility is a job shop with a focus on castings for the cement industry, mining, and aerospace industry. The facility has been in operation since 1970.

The facility currently has 68 employees and operates five days a week (M-F). Melting and casting are conducted four days a week (M-Th) from 04:00 – 14:30.

COMPLIANCE EVALUATION

At the facility, AQD staff consisting of Eric Grinstern (EG) accompanied by Iranna Konanahalli (IK), met with Gloria Webber, General Manager, Dean Turk, Production Manager, and Chris Duckett, Maintenance Manager. The three facility representatives accompanied AQD staff on an inspection of the facility.

Additionally, a call between EG and the facility (Gloria Webber, Chris Duckett, Katherine Jungwirth, and Terry O'Leary) took place on August 25, 2022, to answer questions AQD staff had regarding the facility.

Below is a summary of the processes and operations at the facility.

The facility holds one air use permit for their operations, PTI No. 60-00C.

MOLD AND CORE MAKING

The facility has three sand silos. Two silos are located inside the plant and are associated with the mold lines. These silos receive sand from the thermal reclaim unit as well as new sand. Emissions from these two silos are controlled by Baghouse No. 1. The permit lists the sand silo(s), return sand hopper and sand handling that vent to Baghouse No. 1 as part of EUBAGHOUSE1. Sand from mechanical reclaim is stored in a silo which supplies sand to the thermal reclaim unit. The mechanically reclaimed sand silo is controlled by a bin vent filter.

The facility uses a phenolic urethane no-bake binder system for both molds and cores. The facility switched to a low odor binder supplied by HA approximately 2-3 years ago. The facility also reduced the sand binder content from approximately 1.3% to 1.0 %. The facility has two phenolic urethane no-bake mold lines, each with an associated sand mixer. One line makes larger molds than the other line and has a larger sand mixer. Each line has a flow-coat station where the molds are coated with an alcohol-based coating. Some of the larger molds require the coating to be applied by hand. The coating is ignited after application to the mold. The permit lists mold preparation as being part of FGSCRUBBERS1/2 and having control by the two scavenger wet scrubbers.

The facility also uses shell cores. The facility has three (3) shell core machines, from which emissions vent to in-plant air. The shell core machines are listed in PTI. 60-00C as being part of FGSCRUBBERS1/2 and having control by the two scavenger systems that duct to wet scrubbers.

The facility has a mechanical sand reclamation unit (Gudgeon shakeout table), from which the sand is processed through a thermal sand reclamation unit. All of the sand from shakeout is processed through the thermal reclaim unit.

The thermal sand reclamation unit (EUBAGHOUSE3) is currently controlled by an afterburner and baghouse. The reclaim unit was first permitted under PTI 60-00B (issued July 1, 2003). At that time the reclaim unit was required to have baghouse control but was not required to achieve a minimum temperature to assure destruction of volatile organic compounds associated with the sand binders, either intrinsic to the reclamation system or with an afterburner. When the permit was modified (PTI No. 60-00C), on April 27, 2022, an afterburner achieving a minimum temperature of 1350 degrees F was required.

MELTING

The facility produces steel and stainless-steel castings. The facility has five (5) electric induction furnaces with the following holding capacities: (2) 2-ton capacity, (2) 1-ton capacity, (1) 500-pound capacity. The two 2-ton furnaces are equipped with lids. The facility has the ability to run three furnaces at one time. The furnaces do not have specific capture hooding. The permit list melting as part of EUSCRUBBER1 and FGSCRUBBERS1/2. Scrubber No.1 and Scrubber No. 2 have inlets adjacent to each other, therefore emissions are actually controlled by both of the scrubbers. The permit emission unit summary table lists four electric induction furnaces, which appears to address the two (2) 2-ton and two (2) 1-ton furnaces. The 500-pound capacity furnace would be exempt from permitting under Rule 282(2)(a)(vi).

As part of the inspection, the facility was requested and provided melt data for 2021. The facility records show a total of 1,191.7 tons of metal poured in 2021. The facility alloys with chromium, nickel, and cobalt, along with other alloying elements. The facility supplied data showed the highest chromium content of a heat at 32%, with an average content of 19% (222.8 tons) for 2021. The highest nickel content of a heat was 95%, with an overall average content of 20% (234.0 tons). The highest cobalt content of a heat was 15%, with an overall average content of 1% (7.8 tons).

Furnace charge material consists of 1010 punching, internal runaround, scrap purchased from customers, other scrap, as well as alloying elements. The facility has a raw material procedure plan that details the ordering, accepting, reviewing, approving, and processing of scrap. The facility has a tumblast unit to clean customer scrap before being used as charge. The blast unit is controlled by a baghouse the vents to the in-plant air. The unit is exempt from permitting under Rule 285(2)(I).

POURING, COOLING & SHAKEOUT

Pouring is manually performed with molds being floor poured in front of the melt furnaces. Pouring does not have a specific capture system, with emissions being emitted to the general in-plant air. Capture and control are provided by the plant scavenger system that ducts to EUSCRUBBER1 and EUSCRUBBER2. The equipment summary table of PTI No. 60-00C lists a pour station in EUSCRUBBER1, and a pour station in EUSCRUBBER2. During the inspection, no pour stations were observed. The reference to pour stations is outdated language.

Cooling is conducted on the floor, in the location that the mold was poured. Cooling does not have a specific capture system, with emissions being emitted to the general in-plant air. Capture and control are provided by the plant scavenger system that ducts to EUSCRUBBER1 and EUSCRUBBER2. The equipment summary table of PTI No. 60-00C lists a cast cooling tunnel in EUSCRUBBER2. During the inspection, no cast cooling tunnel was observed. The reference to a cast cooling tunnel is outdated language from when the facility used shell molds. The facility ended shell molds in 2015/2016.

Shakeout/knockout is conducted in a bay with a bobcat. After knockout in the bay, molds are placed on the Gudgeon shakeout table (mechanical sand reclaim). The knockout bay does not have specific capture or control. Shakeout/knockout is not specifically addressed in PTI No. 60-00C. The assumption would be that the emissions will eventually fallout in-plant, with fine particulate eventually being captured by the scavenger system associated with FGSCRUBBER1/2, however the permit fails to include shakeout/knockout in the flex group. The Gudgeon shakeout table is also not specifically listed in the permit but is likely considered to be part of the sand handling system in EUBAGHOUSE1. The table has a capture hood, with control provided by Baghouse No. 1. The table is primarily used to break up the sand molds (mechanical reclamation). Sand from the table is processed in the thermal sand reclamation unit.

FINISHING

The facility has two (2) Wheelabrator table blast units. The blast units have individual baghouses that vent internally. The blast units been identified in previous inspections as exempt from permitting under Rule 285(2)(l). The facility also has an air arc booth that has a capture hood that ducts to Baghouse No. 2. Additionally, the facility has various cut-off saws, grinders, sanders, etc. that vent to the in-plant air. The description for EUBAGHOUSE2 in PTI 60-00C includes a cleaning and finishing system with two blast booths controlled by cyclones and an 8,000 CFM baghouse. This is inaccurate, the only finishing process controlled by Baghouse No. 2 is the air arc booth.

EVALUATION OF COMPLIANCE WITH PTI NO. 60-00C

EUBAGHOUSE1

Sand silo, sand return hopper and handling system controlled by a 12,000 CFM baghouse.

EMISSION LIMITS

The permit limits the emissions of PM to 0.0067 lb./1,000 pounds of exhaust gases and 0.36 pph. Compliance with the emission limits can be determined through stack testing, which has not been required recently. Compliance is also assumed based on proper operation of the baghouse. The facility is required to implement and maintain a MAP to assure proper operation of the baghouse. The facility provided a copy of the MAP, dated May 27, 2022.

During the inspection, observation of the baghouse showed no visible emissions and good housekeeping practices around the unit.

PROCESS/OPERATIONAL RESTRICTION(S)

Requires the facility to implement and maintain a MAP. The facility provided a copy of the MAP.

Requires the associated baghouse to be operated in a satisfactory manner. The baghouse appeared to be in good condition. The baghouse was not operating during the inspection since the process was not operating at the time according to the facility.

Requires doors and window to be closed to limit fugitive emissions. No windows or doors were observed to be open during the inspection.

DESIGN/EQUIPMENT PARAMETER(S)

The facility is required to have a baghouse that is operated in a satisfactory manner that is equipped with a static pressure drop gauge. The baghouse pressure drop is required to be maintained according to the manufacture's specifications. The permit does not specifically require recording of the pressure drop reading; however, the MAP specifies that the pressure drop reading will be recorded daily. The MAP specifies that the normal operating range of the baghouse is 2" to 15" wc. The

facility provided requested pressure drop records for June 2022. Review of the records showed that all readings to be within the specified range.

The permit requires that air flow into the building through all natural draft openings (NDO). During the inspection, nothing contrary to this requirement was observed.

TESTING/SAMPLING

The permit requires PM testing upon request by AQD. Testing has not been recently requested.

MONITORING/RECORDKEEPING

Requires the facility to verify the direction of air flow at each NDO every six months. The facility provided requested NDO test results. The summarized results and provided video show compliance with keeping the building under negative pressure.

EUBAGHOUSE2

Cleaning and finishing system with two blast booths controlled by cyclones and an 8,000 CFM baghouse.

As previously noted, the only part of the finishing system that is controlled by Baghouse No. 2 is an air arc booth.

EMISSION LIMITS

The permit limits the emissions of PM to 0.01 lb./1,000 pounds of exhaust gases and 0.36 pph. Compliance with the emission limits can be determined through stack testing, which has not been required recently. Compliance is also assumed based on proper operation of the baghouse. The facility is required to implement and maintain a MAP to assure proper operation of the baghouse. The facility provided a copy of the MAP, dated May 27, 2022.

During the inspection observation of the baghouse showed no visible emissions and good housekeeping practices around the unit.

PROCESS/OPERATIONAL RESTRICTION(S)

Requires the facility to implement and maintain a MAP. The facility provided a copy of the MAP.

Requires the associated baghouse to be operated in a satisfactory manner. The process and baghouse were not operating during the inspection.

Requires doors and windows to be closed to limit fugitive emissions. No windows or doors were observed to be open during the inspection.

DESIGN/EQUIPMENT PARAMETER(S)

The facility is required to have a baghouse that is operated in a satisfactory manner that is equipped with a static pressure drop gauge. The baghouse pressure drop is

required to be maintained according to the manufacture's specifications. The permit does not specifically require recording of the pressure drop reading; however, the MAP specifies that the pressure drop reading will be recorded daily. The MAP specifies that the normal operating range of the baghouse is 2" to 8" wc. The facility provided requested pressure drop records for June 2022. Review of the records showed all readings to be within the specified range. At the time of the inspection EUBAGHOUSE3 and the baghouse were not operating.

The permit requires that air flow into the building through all natural draft openings (NDO). During the inspection, nothing contrary to this requirement was observed.

TESTING/SAMPLING

The permit requires PM testing upon request by AQD. Testing has not been recently requested.

MONITORING/RECORDKEEPING

Requires the facility to verify the direction of air flow at each NDO every six months. The facility provided requested NDO test results. The summarized results and provided video show compliance with keeping the building under negative pressure.

EUBAGHOUSE3

Sand reclamation system controlled by a thermal combustion chamber and 14,000 CFM baghouse arranged in series. The thermal secondary combustion chamber is used to destroy fumes from a burn-off oven that removes resins and binders from sand. The burn-off oven is a continuous process operated as needed with a maximum design capacity of 1.5 tons of sand processed per hour.

EMISSION LIMITS

The permit limits the emissions of PM to 0.0093 lb./1,000 pounds of exhaust gases and 0.585 pph., and VOC to 0.3 pph. Compliance with the emission limits can be determined through stack testing, which has not been required recently. Compliance is also assumed based on proper operation of the baghouse and maintaining the afterburner temperature at minimum of 1350 degrees F. The facility is required to implement and maintain a MAP to assure proper operation of the baghouse and afterburner. The facility provided a copy of the MAP, dated May 27, 2022.

During the inspection, observation of the baghouse showed good housekeeping practices around the unit. The sand reclaim unit and baghouse was not operating at the time of the inspection.

MATERIAL LIMIT(S)

Limits natural gas as the only fuel allowed in the thermal combustion chamber. No other source of fuel was observed during the inspection.

PROCESS/OPERATIONAL RESTRICTION(S)

Requires the facility to implement and maintain a MAP. The facility provided a copy of the MAP.

Require the associated baghouse to be operated in a satisfactory manner. The baghouse and process were not operating during the inspection.

Requires doors and windows to be closed to limit fugitive emissions. No windows or doors were observed to be open during the inspection.

DESIGN/EQUIPMENT PARAMETER(S)

The facility is required to have a baghouse that is operated in a satisfactory manner that is equipped with a static pressure drop gauge. The baghouse pressure drop is required to be maintained according to the manufacture's specifications. The permit does not specifically require recording of the pressure drop reading; however, the MAP specifies that the pressure drop reading will be recorded daily. The MAP specifies that the normal operating range of the baghouse is 3" to 4" wc. The facility provided requested pressure drop records for June 2022. Review of the records showed the readings for June 13, 14, and 15th to be 2.0" wc, which is below the established range. The facility notes stated that the baghouse was checked for leaks/separation due to the low reading. The pressure drop returned to 3" wc on June 16th.

The permit requires the afterburner to be installed, maintained, and operated in a satisfactory manner, as well as maintaining a minimum temperature of 1350 degrees F, and monitoring and recording of the temperature on a continuous basis. During the inspection staff observed the afterburner temperature monitor. The facility provided requested afterburner temperature records for June 2022. Review of the records showed that there were frequent readings where the temperature dropped slightly below 1350 degrees (down to 1347 degrees F) for brief periods while the process was operating.

The permit requires that air flow into the building through all natural draft openings (NDO). During the inspection, nothing contrary to this requirement was observed.

TESTING/SAMPLING

The permit requires PM testing upon request by AQD. Testing has not been recently requested.

MONITORING/RECORDKEEPING

Requires the facility to verify the direction of air flow at each NDO every six months. The facility provided requested NDO test results. The summarized results and provided video show compliance with keeping the building under negative pressure.

FGSCRUBBERS1/2

Melting, pouring, cooling of metal and mold/core preparation operations controlled by two 40,000 CFM wet scrubbers that are arranged in parallel. There is a liquid

phase carbon adsorption system, with random packing to increase mass transfer surface area and is present to reduce organics in the scrubber liquor.

Emission Unit: EUSCRUBBER1 and EUSCRUBBER2

EMISSION LIMITS

The permit limits the emissions of VOC to 25.0 pph., 0.28 lb./ton of metal melted and 36.14 tpy. Compliance with the emission limits can be determined through stack testing, which has not been required recently. Compliance is also assumed based on proper operation of the scrubbers. Based on the observations during this inspection, compliance with the VOC limits cannot be determined based upon failure to properly operate the scrubbers.

The facility is required to implement and maintain a MAP to assure proper operation of the scrubbers. The facility provided a copy of the MAP, dated May 27, 2022.

MATERIAL LIMIT(S)

Limits mold and core sand usage to 18,913 tons per year. The facility calculates sand usage based on the sand to metal ratio. Review of the record showed compliance with the throughput limit.

PROCESS/OPERATIONAL RESTRICTION(S)

Requires the facility to implement and maintain a MAP. The facility provided a copy of the MAP.

Requires the scrubbers to be installed and operating properly. During the inspection observation of the pressure drop gages showed a reading of 0.1 for Scrubber No.1 and a reading of 0.0 for Scrubber No. 2. The established pressure drop operating range is 0.0 wc to 0.35 wc. Observation of the scrubber water flow gages showed no water flow for Scrubber No. 1 and a flow rate of 333 gpm for Scrubber No. 2. Upon inspection of the scrubber system, staff noted that there was no return scrubber water from either Scrubber No. 1 or Scrubber No. 2. It was determined that there was no scrubber water being pumped to either Scrubber No.1 or Scrubber No. 2. Mr. Duckett was able to get the system back operating, with water flowing to and from each of the scrubbers. Review of the flow gages was conducted after the system was operating. The flow for Scrubber No. 1 fluctuated from 30-134 gpm, while the flow reading for Scrubber No. 2 had a reading of 333 gpm. Staff later (~1 hour) returned to observe the scrubber systems. The scrubber systems were again not receiving scrubber water, therefore not operating properly.

On August 30, 2022, Temperform, LLC provided records documenting that the facility operated FGSCRUBBERS1/2 while Scrubber No. 1 and Scrubber No. 2 were not operational and being repaired on the following dates: August 8, 2022, August 9, 2022, August 10, 2022, August 11, 2022, August 15, 2022, August 16, 2022, August 17, 2022, August 22, 2022, and August 23, 2022.

Previous compliance inspections (March 5, 2020, June 21, 2021) documented that Scrubber No. 1 was not operating. During the June 21, 2021, inspection, it was noted

that the flow rate display for Scrubber No. 1 was not accurate. Additionally, during a complaint investigation on April 25, 2019, AQD staff documented the flow reading for Scrubber No.1 fluctuating significantly and the No. 2 Scrubber not operating. A VN was issued to address the scrubbers not operating properly on April 25, 2019.

In accordance with PTI 60-00C, the permittee shall not operate any unit of FGSCRUBBERS1/2 unless both scrubbers are installed and operating properly. Therefore, both scrubbers should have been operating during the March 5, 2020, and June 21, 2021, inspection since poured molds would have been cooling, and mold and core preparation operations were likely occurring at the time of the inspections.

Therefore, it appears that the operational issue with the scrubbers is an ongoing problem that has not been properly addressed or resolved.

The permit requires a liquid phase carbon adsorption system (or equivalent system) for each of the scrubbers. The carbon system has been in place for a number of years and was included in the permit as part of the last revision. The permit also requires testing for organics in the scrubber liquor and testing of the carbon for saturation or break-through, at a frequency stated in the approved MAP. The facility provided MAP does not address any testing related to the liquid phase carbon adsorption system. The facility stated that they do conduct the required testing to evaluate the carbon system.

During this inspection, AQD staff observed that the scrubber water was extremely dirty. It appeared that the water was saturated with particulate, which would limit the efficiency of the system. It was later determined that the carbon infiltrated the scrubber water and was the cause of the pump system failure.

Requires doors and windows to be closed to limit fugitive emissions. No windows or doors were observed to be open during the inspection.

DESIGN/EQUIPMENT PARAMETER(S)

The facility is required to have liquid flow monitoring devices for each of the scrubbers. The device is required to record the flow rates of effluent, make-up, and recirculation on an hourly basis. During the inspection AQD staff observed one liquid flow monitoring device for each scrubber that monitors recirculation water. The facility provided requested scrubber flow records for the month of June 2022. The records contained a daily reading of the gallons per minute (GPM) for each of the scrubbers. The daily readings of GPM were within the established ranges for each scrubber. The facility stated that they do not have monitoring devices installed yet that record flow rates on an hourly basis.

The facility is required to install and maintain a device to monitor and record the pressure drop across the scrubbers on a continuous basis. During the inspection a pressure drop gage for each of the scrubbers was observed. No device capable of continuous recording was observed. The facility provided requested pressure drop records for June 2021. The provided records contain daily pressure drop readings. The facility stated that they do not have monitoring devices installed yet that record pressure drop on a continuous basis.

The permit requires that air flow into the building through all natural draft openings (NDO). During the inspection, nothing contrary to this requirement was observed.

TESTING/SAMPLING

The permit requires VOC testing upon request by AQD. Testing has not been recently requested.

MONITORING/RECORDKEEPING

The permit requires that the facility maintain daily records of the pressure drop across the scrubber. This condition appears to contradict S.C. IV.2., which requires continuous records of the pressure drop. The facility is manually recording the daily pressure drop reading of each scrubber once per day.

The permit requires that the facility maintain daily records of the daily average of the liquid flow rate through the scrubber. This condition appears to contradict S.C. IV.1., which requires hourly records of the flow rates of effluent, make-up and recirculation. The facility is manually recording the liquid flow rate through each scrubber, once per day, which is not a daily average.

The facility is required to record the amount of mold and core sand processed per month. The facility provided records of mold and core sand usage for June 2022, as requested.

The facility is required to record the amount of metal poured per month, and to calculate the monthly VOC emission rate for FGSCRUBBERS^{1/2}. A VOC emission rate of 0.28 pounds of VOC per ton of metal poured is used to calculate VOC emissions, based on the most recent compliance test. The facility provided VOC emission records for the previous 12-months, as requested. Recorded monthly emissions ranged from 22.7 pounds to 38.9 pounds per month.

Requires the facility to verify the direction of air flow at each NDO every six months. The facility provided requested NDO test results. The summarized results and provided video show compliance with keeping the building under negative pressure.

Subpart ZZZZZ – Area Source Iron and Steel Foundry NESHAP

The facility is subject to Subpart ZZZZZ and is classified as a small area source.

The facility appears to have submitted the required initial notifications. The facility also submitted the required semi-annual certifications until 2020. No certifications have been received for 2020 until current.

The facility provided SDSs and records documenting monthly and annual metal throughput, as well as records of usage for sand binders and coatings containing HAPs (attached), as required by the NESHAP.

The facility also provided a copy of their raw material procedure plan that details the ordering, accepting, reviewing, approving, and processing of scrap.

The requirements of reporting via CEDRI were discussed.

CONCLUSION

Based on the information and observations during this inspection, the facility appears to be in compliance at this time with applicable air quality rules and regulations, with the exception of the following:

EUBAGHOUSE3, IV.4 – Failure to maintain a minimum afterburner temperature of 1350 degrees F while processing sand in the thermal reclamation unit.

FGSCRUBBERS1/2, III.2. – Operation of emission units associated with FGSCRUBBERS1/2, while neither of the scrubbers were operating properly.

FGSCRUBBERS1/2, IV.1. – Failure to install and operate liquid flow monitoring devices for each scrubber to record the flow rates of effluent, make-up, and recirculation water on an hourly basis.

FGSCRUBBERS1/2, IV.2 – Failure to install and operate pressure drop monitoring devices to record pressure drop for each scrubber on a continuous basis.

Area Source Iron and Steel Foundries NESHAP, 40 CFR Part 63 Subpart ZZZZZ (63.10890(f)) Failure to submit semiannual certification reports for 2020 until current.

A Violation Notice will be issued for the above listed violations.

The facility will also be requested to conduct air emission performance testing on each of the wet scrubbers associated with FGSCRUBBERS1/2. In accordance with Rule 1001 (R336.2001) and Special Condition 13. of Permit to Install No. 60-00C, performance testing to determine the emission rate of VOC, PM, PM10, PM2.5., as well as the metal HAPs: antimony, arsenic, beryllium, cadmium, chromium, cobalt, lead, manganese, mercury, nickel, and selenium.

Additionally, the MAP needs to be revised to include testing for organics in the scrubber liquid and testing of carbon to determine saturation or break-through, as required by FGSCRUBBERS1/2, III.2.

Records Attached

- EUBAGHOUSE3 Temperature Records
- MAP
- Raw Materials Procedure
- VOC Monthly Records
- Sand and Metal Usage Records
- Baghouse and Scrubber Monitoring Records
- PM Work Orders for FGSCRUBBERS1/2

- NDO Test Report/Procedures
- Sand Binder and Coating SDS

NAME Eric Grinstern

DATE 09/06/2022

SUPERVISOR Joyce H