N7871
MANILA

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

N787150312

FACILITY: TOWER AUTOMOTIVE		**SRN / ID:** N7871
LOCATION: 43955 PLYMOUTH OAKS BLVD, PLYMOUTH		**DISTRICT:** Detroit
CITY: PLYMOUTH		**COUNTY:** WAYNE
CONTACT: James Pace , Engineer - EH & S		**ACTIVITY DATE:** 08/20/2019
STAFF: Stephen Weis	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** SM OPT OUT
SUBJECT: Compliance inspection of the Tower Automotive facility in Plymouth. The Tower Automotive facility is scheduled for inspection in FY 2019.		
RESOLVED COMPLAINTS:		

Location:

Tower Automotive (SRN N7871)
43955 Plymouth Oaks Blvd.
Plymouth

Date of Activity:

Tuesday, August 20, 2019

Personnel Present:

Steve Weis, EGLE-AQD Detroit Office
James Pace, Engineer – Environmental Health and Safety, Tower International
Todd Gibbish, E-Coat Supervisor, Tower International

Purpose of Activity

A self-initiated inspection of the Tower Automotive Operations, LLC facility (hereinafter "Tower") was conducted on Tuesday, August 20, 2019. The Tower facility was on my list of sources targeted for an inspection during FY 2019. The purpose of this inspection was to determine compliance of operations at the Tower facility with applicable rules, regulations and standards as promulgated by Public Act 451 of 1994 (NREPA, Part 55 Air Pollution Control) and Federal standards. The facility is also subject to the terms and conditions of Permit to Install No. 103-02C.

Facility Site Description

The Tower facility consists of a roughly 300,000 square foot building and adjacent parking areas. The facility began operations in August of 1996 as Metokote, and it was purchased by Tower International in March of 2011.

The Tower facility is located on a roughly 20-acre parcel on the east side of Plymouth Oaks Boulevard in the Plymouth Oaks Business Park, which is located on the east side of Sheldon Road south of the M-14 freeway in Plymouth. The Business Park is bounded on the east and south by the CSX Transportation railroad tracks and associated right-of-way property. The Tower facility is located at the southeast corner of the Business Park. The Ilmor Engineering, Inc. facility (SRN M4836) is located directly to the north of Tower, and the SME (Soil & Materials Engineering) consulting office complex is located directly across Plymouth Oaks Blvd. to the west of Tower. The Tower property's eastern and southern boundaries back up to the CSX property, which includes a railyard located to the east of Tower.

The nearest residential area to the facility begins south of the railroad tracks. There are a couple of facilities directly to the south of Tower between the railroad tracks and Junction Street (Dynamic Diagnostics, Messina Concrete), but the area to the south of Junction is the start of a densely populated residential area in the City of Plymouth, and there are some residences on the north side of Junction and along streets the run north across Junction up to the railroad right-of-way. The closest residential properties are located approximately 150 yards to the southwest of the Tower facility's building structure.

Facility Operations

Tower International is headquartered in Livonia, Michigan. According to the company website (www.towerinternational.com), "Tower International is a leading manufacturer of engineered automotive structural metal components and assemblies, primarily serving original equipment manufacturers ("OEMs")." The website provides that Tower supplies automotive customers with "...body-structure stampings, frame and other chassis structures, and complex welded assemblies for small and large cars, crossovers, pickups and sport utility vehicles." Tower has 14 manufacturing facilities in the United States, Mexico and Brazil.

The Tower facility in Plymouth produces lower vehicle frames and structures for FCA (Fiat Chrysler Automobiles), specifically for the Jeep brand. The product includes the frame and cross members for the vehicle. An illustration from the company website that provides a representative idea of the product that is currently being produced at the Tower Plymouth facility is attached to this report for reference. The facility currently produces frames for the Jeep Wrangler, which are sent to the FCA assembly plant in Toledo, Ohio. There are 13 variations in the frames that are produced at the facility for the Wrangler vehicle.

The Tower facility receives stamped steel frames, which go through one of the automotive frame manufacturing lines at the facility. The various parts and components of the frame (the front end, back end, cross members, towing components) are welded utilizing a variety of manual and robotic welding stations. The manufacturing lines vent inside of the building, and some of the lines are equipped with air cleaning units that draw in air from the work area of a specific portion of the manufacturing line, run it through a filtration device and return/vent the air back to the in-plant environment.

The assembled frames are then run through an electrodeposition (E-Coat) line through which anti-corrosion coating is applied and cured onto the frames. After completing the manufacturing process, frames are loaded into carriers, which are metal structures that can hold up to 6 frames. The carriers and frames are loaded into the automated coating process, which begins with an eight-stage pre-treatment process through which the frames are immersed in eight separate tanks (each having a capacity of 15,000 gallons) that contain materials that clean and condition the frames prior to E-Coat application. The frames spend 4 minutes in each stage of the pre-treatment process. After pre-treatment, the frames are immersed in the E-Coat tank. The coating is applied to the frames via an electrodeposition process – the coating is a cathodic coating, having a positive charge, and the frames and carriers are grounded so as to have a neutral charge.

After being coated with E-Coat, the frames are run through two permeate rinse tanks that serve to remove excess solids from the E-Coat application from the frames. The frames and carriers then pass through an air knife filter, which is a blower that knocks excess coating/drippings from the frames and carriers. The last step of the coating process is the cure oven. The frames spend about an hour in the oven, which is heated to 380° F, to cure the coating on the frames. The completed frames are moved to the facility's shipping area, where they are loaded into different carriers for shipment to the FCA Jeep plant.

The Tower facility's Permit to Install (PTI) defines Emission Units and Flexible Groups that represent the various processes at the facility that are subject to the terms and conditions of the PTI. These are defined as follows:

- EUELECTROCOAT – the PTI defines this Emission Unit as an electrodeposition coating process and an associated 8.7 MMBTU/hour natural gas-fired curing oven.
- FGFACILITY – this Flexible Group represents "All process equipment source-wide including equipment covered by other permits, grand-fathered equipment and exempt equipment." In this PTI, the Flexible Group serves to put forth a facility-wide opt-out limit for emissions of hazardous air pollutants (HAPs).

I was told during the site visit that the Tower facility currently operates three shifts Monday through Friday, with an occasional sixth day to perform maintenance and preventative maintenance activities. According to the 2018 MAERS report, there are 410 employees at the facility.

Inspection Narrative

I arrived in the vicinity of the facility at 12:40pm. Prior to conducting the site visit, I performed odor surveillance downwind of the facility, as the Tower facility has been the source of odor complaints. Meteorological data from the National Weather Service station at Detroit Metro Airport showed that winds were coming from the south with an ambient air temperature of 84° F. I surveyed in the north parking lot of the Tower facility, in the parking lot of the Ilmor Engineering facility directly to the north of Tower, and along Plymouth Oaks Blvd. to its northern

terminus. I did not detect any odors from the Tower facility during this pre-site visit odor surveillance.

I checked in at the main entrance at 12:52pm, and I was soon met by James Pace. James and I proceeded to Todd's office, and we began discussing operations at the Tower facility. We started by discussing the history of the location. Todd told me that Metokote began operations at the facility in August of 1996. There were joint operations between Metokote and Tower, and Tower purchased the facility in March 2011. Todd provided me with the facility operating schedule – 3 shifts, 5-6 days per week (with the additional day for maintenance activities, as needed).

James and Todd described the frame manufacturing process. They told me that the primary frame structure, which is made out of steel, is stamped by an outside company and delivered to the facility. The frames go through one of the frame manufacturing lines at the facility, where the front and rear portions of the frame and various components are welded. After the manufacturing stage, the frames go through the coating process.

Todd described the stages of the coating process. He explained that the frames go through an eight-stage pre-treatment process prior to their being dipped in the E-Coat tank. He said that each tank is 15,000 gallon capacity, and the frames are immersed in each tank. Tank 1 is a cleaning tank that contains an alkaline solution; Tank 2 is a water rinse; Tank 3 contains a rinse conditioner; Tank 4 contains zinc phosphate; Tank 5 is another water rinse; Tank 6 contains a product referred to as "chem seal"; Tanks 7 and 8 are water rinses that contain de-ionized and reverse osmosis water, respectively.

After going through the pre-treatment process, the frames are immersed and coated in Tank 9, which is the E-Coat tank. After the E-Coat tank, the frames are immersed in Tanks 10 and 11, which contains a permeate rinse that Todd explained serves to remove excess solids from the E-Coat. Todd said that the line speed at which the frames are run is set such that the frames spend about 4 minutes in each cycle. He said that the frames spend about an hour in the cleaning and coating tanks, and an hour in the curing oven. Regarding the water rinse tanks, Todd explained that Tank 8 can fill Tank 7, and Tank 7 overflows to Tank 5; he said that the facility tries to reuse water having less reactivity within the pre-treatment process. The contents of Tanks 2 and 5 is directed to a day tank, which discharges to the facility's on-site wastewater treatment process.

We then walked around the facility to look at the various operations associated with the frame manufacturing process. We started at the point where the frames are loaded onto the carriers. James and Todd explained that the carriers were redesigned in 2016-2017 as part of the company's efforts to minimize odors from the coating process. It was pointed out that the carriers have less ledges and other surfaces that would allow coating to accumulate or rest. We walked along the pre-treatment and coating processes via the elevated catwalk adjacent to the tanks. After looking at the permeate tanks, we left the catwalk and the air knife blower was pointed out to me. It was explained that the carriers and frames sit in the knife blower for approximately 30 seconds, with the air blowing excess coating /drippings from the carriers and frames.

We walked to the opening of the cure oven. I looked at the facility's wastewater treatment tanks, which are located adjacent to the oven opening at the southwest corner of the facility's manufacturing area. Regarding the oven, it was explained to me that the oven can hold up to 16 carriers loaded with frames, and that the curing time for the frames is one hour, with the carriers slowly moving through the oven. There are hoods over the entrance and exit portions of the oven that draw heat away and vent to the ambient air. The oven also vents to the ambient air.

We then walked through the rest of the facility. In the facility's maintenance area, James pointed out and described the Crystal Clean parts washer, which was affixed with an orange DEQ Cold Cleaner sticker. The lid on the unit was closed. We walked along one of the frame manufacturing lines. James described the various workstations along the line as we walked by them.

I asked if there are any boilers or emergency generators/engines in use at the facility. Todd told me that there are two heaters (Sellers boilers) associated with Tanks 1 and 2 in the pre-treatment process. We looked at these heaters during our walkthrough, and they were small (about the size of a large residential hot water heater). I was told that the facility does not currently have any emergency engines/generators.

We returned to Todd's office to discuss the facility's permit, and how Tower determines compliance with the requirements of the PTI. We discussed the special conditions in the PTI, as well as the Nuisance and Odor Minimization Plans that are attached to the PTI. Todd provided me with copies of facility records that tracked items such as E-Coat line material usage and emissions estimates, and equipment maintenance, and Todd and James explained the information presented in the records. The facility's compliance with the terms and conditions of PTI No. 103-02C is discussed in further detail in the next section of this report.

After a discussion to summarize the site visit, I left the facility at 3:50pm.

Permits/Orders/Regulations

Permits

Permit to Install No. 103-02C was issued to Tower on June 13, 2016. The permit addresses the operation of the E-Coat line, with special conditions put forth in the EUELECTROCOAT Emission Unit table. The permit also includes a Flexible Group, FGFACILITY, that addresses "All process equipment source-wide including equipment covered by other permits, grand-fathered equipment and exempt equipment." The Flexible Group puts forth HAP opt-out limits.

The following provides a description of the Tower facility's compliance with the Special Conditions put forth by Permit to Install No. 103-02C:

EUELECTROCOAT

I. Emission Limits

Special Condition (SC) I.1 puts forth a VOC emission limit of 41.9 tons per year (tpy) on a 12 month rolling time period as determined at the end of each calendar month.

Todd provided me with a copy of a document titled "VOC Reporting Tower 2019", which provides the year-to-date 2019 and 2018 material usage and associated VOC emissions on a monthly basis, and 12 month rolling totals for VOC emissions. Based on these records, for July 2019, the last completed operating month, the 12 month rolling VOC emissions are 11.60 tpy. The highest recorded 12 month rolling VOC emissions for the reporting time period was 14.27 tpy of VOC, reported in December 2018. A copy of the records that Todd provided are attached to this report for reference.

II. Material Limits

SC II.1 puts forth a VOC limit of 0.6 pounds per gallon (minus water) as applied in the materials used in the E-Coat line.

Todd provided me with Environmental Data Sheets for the paste and resin that make up the E-Coat that is used at the Tower facility. The sheets for FRMP3200 FrameCoat Paste and FRMR2200 FrameCoat Resin provide the VOC content of each of these products. Copies of the Environmental Data Sheets for these two products is attached to this report. The reporting sheet that was referenced in the discussions in the Emission Limits section also includes the VOC content of the paste and resin, along with the amount of each product that was used during each calendar month. Combining the VOC content (minus water) from each product, as provided on the "VOC Reporting Tower 2019" spreadsheet, with the amount of each product used, and dividing this total by the sum of the amount of paste and resin used for each month provides an estimate of the VOC content of the E-Coat, as applied. For July 2019, the estimate would be:

{959 gal of paste x 2.21 lb/gal VOC} + {6,888 gal of resin x 0.32 lb/gal VOC} = 4,323.55 lbs VOC (minus water)

4,323.55 lbs VOC / 7,847 gallons of paste and resin use = 0.55 lbs/gal VOC (minus water)

This calculation can be performed based on the monthly records that are kept by facility staff. The facility looks to be in compliance with the requirement of SC II.1.

III. Process/Operation Restrictions

SC III.1 - Compliance. Tower staff told me that all waste coatings and materials are collected, stored in closed containers, and disposed of in an acceptable manner.

SC III.2 - Compliance. The facility handles VOC and HAP containing materials in a manner so as to minimize the generation of fugitive emissions.

SC III.3 – Compliance. Tower has development and implemented a Nuisance Minimization Plan (NMP), which is attached to the PTI as Appendix A. The provisions of the NMP will be discussed in greater detail later in this section.

IV. Design/Equipment Parameters

There are no design/equipment parameters put forth for this Emission Unit.

V. Testing/Sampling

SC V.1 addresses the VOC content of the material used in the E-Coat tank. The supplier of the paste and resin, PPG, provides the VOC content for these materials. The facility is in compliance with this requirement.

VI. Monitoring/Recordkeeping

SC VI.1 – The required records are complete and available for AQD review. Compliance.

SC VI.2 – Compliance. Tower maintains records from their material supplier of the chemical composition of each material used in the E-Coat process.

SC VI.3 – Compliance. Tower maintains monthly records of the amount of each material used in the E-Coat process, the VOC content, and required monthly and 12 month rolling total VOC emissions calculations. A copy of the "VOC Reporting Tower 2019" sheet that was provided by Tower is attached to this report.

SC VI.4 – Compliance. Tower maintains records related to frame carrier cleaning program that is part of the NMP. A copy of facility records showing that all 28 frame carriers were cleaned "...by way of dry ice blasting and chisels on 5/15/19" is attached to this report.

VII. Reporting

There are no reporting requirements specified for this Emission Unit.

VIII. Stack/Vent Restrictions

The stack/vent parameters were not verified. During our discussion about this section, I was told that the stacks identified as SVELECTROCOAT1 and SVELECTROCOAT3 are for the entrance and exit hoods to the E-Coat cure oven, and that SVELECTROCOAT2, which is 3 feet taller than the other two, is the oven stack.

IX. Other Requirements

There are no requirements in this section.

FGFACILITY

This Flexible Group serves to put forth emission limits and monitoring and recordkeeping requirements to limit HAP emissions to below major source thresholds.

The material that is used in the E-Coat process does not contain HAPs. The cover sheet for the Environmental Data Sheet for the E-Coat material includes a statement that the FrameCoat product is HAPs-free. The materials used in the eight-stage pre-treatment process do not contain HAPs. The material used in the Crystal Clean parts washer contains some HAPs, but due to the low content of HAPs in the material and the low usage rate of the material, HAP emissions from the parts washer are expected to be very low. The parts washer meets AQD PTI exemption criteria, so records are not required to be kept of the amount of material used in the parts washer.

The Tower facility is currently meeting the requirements of this Flexible Group.

Appendix A to the PTI – Nuisance Minimization Plan

We discussed the facility's compliance with the NMP. The Introduction section of the NMP states that the "... (NMP) has been developed for the facility's E-Coat operation for the purpose of preventing objectionable odors, if any are present, from affecting off-site areas." Section II of the NMP presents planned changes in the E-Coat process by the facility to address odor concerns; the changes were to be implemented by October 28, 2016. There are three changes listed, all of which have been implemented – the frame carriers were redesigned so as to reduce the amount of E-Coat material that accumulates on the carriers; the oven stack was moved and modified to meet the stack requirements in section VIII in EUELECTROCOAT (and the heat exchanger was eliminated); and the air knife apparatus at the end of the E-Coat application process was upgraded to increase the blow off capacity to remove more excess E-Coat from the frames and carriers.

Section III of the NMP presents a maintenance schedule for the E-Coat line. These maintenance activities were discussed, and I was provided with records that summarized the maintenance activities. The maintenance schedule requires that all of the frame carriers shall be cleaned at least every six months. As mentioned previously in this report, all 28 carriers were cleaned on May 15, 2019, and I was provided with a record of the cleaning, which is attached to this report. Tower is required to work to prevent excess paint from accumulating on the floor of the cure oven. I was provided with a copy of the internal work order form that shows the maintenance performed on the cure oven over the past year. The maintenance includes cleaning of the floor, walls and ceiling of the oven, and indicates whether any additional repairs or preventative maintenance was performed. The copy of the oven work order is attached to this report for reference. I was pointed out that the date for the most recent activity is incorrect on the form; the cleaning activity was completed in July 2019. I was told that material removed during the cleaning process is placed in closed containers and removed from the facility in an acceptable manner, in compliance with the requirements of the NMP.

The NMP also includes a filter cleaning and replacement program for the E-Coat process. I was told that for the E-Coat bag filter, the pressure drop across the bag filter is read twice per operating shift, and of the pressure drop is greater than 5 psi, then the filter is changed. I was shown a log sheet titled "Filter Bag PSI/Ultrafilter Check Sheet", through which the recorded pressure drop readings and any bag replacements are noted. I was provided with a copy of the sheet for the week of August 5, 2019, and it is attached to this report for reference. The facility is also required to replace the elements of the filter associated with the air knife apparatus at least every 60 days. I was provided with records of the work order form for the air knife system from March 2019 through the week of the site visit, which is attached to this report. The work order records show that Tower is replacing the filters on an almost weekly basis, in compliance with the requirements of the NMP.

The NMP also includes housekeeping measures in section IV of the document. I was told that the facility is complying with the housekeeping requirements of the NMP. During our walkthrough of the E-Coat and pre-treatment process, the floors and aisles were clean, and all of the material storage containers that I saw were closed.

The final section of the NMP, section V, addresses the actions to be taken by facility staff when they become aware of an odor incident. James described the procedure that is followed by facility staff to investigate odor incidents. He told me that when AQD staff notify facility staff of an odor complaint, Tower creates an entry on an internal spreadsheet that notes the date and time of the complaint, the general location that the odor was noticed, weather conditions, whether the facility was operating, and includes comments about the facility operations at the time of the complaint. James provided me with a copy of the sheet, which is attached to this report, that goes back to March of 2017. James told me that odor complaints are shared with other staff at the facility so that facility operations can be checked. James and I discussed the notification routes for AQD staff to notify staff at the Tower facility when we either receive an odor complaint, or when we detect odors while performing odor surveillance in the area.

At the time, the Tower facility appears to be complying with the requirements put forth in the NMP.

State Regulations

The frame assembly operations at the facility, including the welding equipment, are exempt from AQD permitting requirements per the provisions put forth in Michigan Administrative Rule (Rule) 285(2)(l). Emissions from these processes are vented in-plant, and some portions of the process are vented to air filtration devices that vent in-plant. The facility file contains calculations that were provided by Tower in 2017 that show that actual emissions from the welding operations are below the significance levels in Rule 278(1)(b).

The on-site wastewater treatment process should be exempt from AQD permitting requirements per the provisions of Rule 285(2)(m). These provisions exempt process water and wastewater treatment equipment. There is an exception to the exemption for equipment that is "Primarily designed to treat volatile organic compounds in the process water, wastewater…". The treatment process treats material from tanks in the pre-treatment process, and it is not primarily designed to treat VOCs. The amount of VOCs in the wastewater from the pre-treatment process should be minimal, and the wastewater treatment process vents inside of the building.

The Crystal Clean parts washer meets the permit exemption criteria of Rule 281(2)(h). The facility appears to be operating the parts washer in compliance with applicable provisions of Rule 707.

Federal Regulations

There are currently no Federal regulations specific to the operations at the Tower facility that are applicable at this time. 40 CFR Part 63, Subpart MMMM (National Emission Standards for Hazardous Air Pollutants for Surface Coating of Miscellaneous Metal Parts and Products)applies to the coating of metal parts, but it is not applicable to the Tower facility as it is not a major source of HAP emissions.

Compliance Determination

Based upon the results of the August 20, 2019 site visit and subsequent records review, the Tower Automotive Operations facility in Plymouth appears to be in compliance with all of the terms and conditions of the facility's Permit to Install, as well as applicable State and Federal regulations.

Attachments to this report: an illustration of the frame that is produced at the facility; material usage and VOC records for the E-Coat line; copies of the Environmental Data Sheets for the FrameCoat product; a copy of the most recent carrier cleaning log sheet; a copy of the work order for maintenance/cleaning of the cure oven; a copy of the log sheet for the E-Coat filter bag and the ultra filter; a copy of the work order for the maintenance of the air knife system filter; a copy of the facility's internal odor incident log sheet.

NAME _____ DATE 9/9/19 SUPERVISOR JK