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

P063638311

FACILITY: Elm Plating Co. - Hupp Street		**SRN / ID:** P0636
LOCATION: 533 Hupp Street, JACKSON		**DISTRICT:** Jackson
CITY: JACKSON		**COUNTY:** JACKSON
CONTACT: Alan Kinsler , Environmental		**ACTIVITY DATE:** 01/17/2017
STAFF: Mike Kovalchick	**COMPLIANCE STATUS:** Unknown	**SOURCE CLASS:** SM OPT OUT
SUBJECT: Full Compliance Evaluation (FCE) and Inspection (PCE) of Elm Plating (Plant 3) Hupp Street, a HAP Synthetic Minor / Opt-Out Source. Also observed stack test for capture/control of VOC's from the coating lines.		
RESOLVED COMPLAINTS:		

Full Compliance Evaluation (FCE) and Inspection (PCE) of Elm Plating (Plant 3), a HAP Synthetic Minor / Opt-Out Source. Also includes stack test observations for capture/control of VOC's from the coating lines.

Facility Contact

Allen Kinsler (AK) Process/Environmental Manger for all Elm Plating locations in Jackson.

ph 517-782-7758 allen.kinsler@elmplating.com

Website: elmplating.com

Purpose

On January 17, 2017, I conducted an unannounced compliance inspection of Elm Plating Company's third plant (Company) located within the city of Jackson. I also observed a scheduled stack test for VOC emissions from their paint lines. The purpose of the inspection was to determine the facility's compliance status with the applicable federal and state air pollution regulations, particularly Michigan Act 451, Part 55, Air Pollution Control Act and administrative rules, HAP Opt-out Permit to Install (PTI) 113-16 and Consent Order No. 27-2016. The purpose of the stack test was to test for VOC destruction and capture efficiency to check for compliance with their newly issued permit PTI 113-16.

Facility Location

The facility is located in the city of Jackson. It is surrounded by commercial/industrial establishments on all sides. See attached aerial photo.

Facility Background

The Company was issued PTI 113-16 on August 26, 2016 to resolve a Rule 201 violation for operating 2 coating lines without a PTI permit. Consent Order No. 27-2016 become effective July 15, 2016. It requires that they comply with PTI 113-16.

Regulatory Applicability

Active Permits:

-HAP Opt Out Permit PTI 113-16 for 2 dip-spin coating application stations, drying ovens and associated equipment to the coat the surface of the miscellaneous metal parts all controlled by a RTO. The coatings lines must comply with Rule 702(a) and Rule 225(a).

-PTI 113-16 includes FG-DIPSPINS and FGFACILITY

FG-DIPSPINS includes Two (2) dip-spin coating lines controlled by an RTO.

FGFACILITY includes all process equipment source-wide including equipment covered by other permits, grand-fathered equipment and exempt equipment.

Consent Orders:

CO No. 27-2016 was issued to resolve a Rule 201 violation for install 2 coating lines without a permit. The CO became effective on July 15, 2016 and will remain in effect for at least 2 years.

Arrival & Facility Contact

Visible emissions or odors were not observed upon my approach to the Company's facility. I arrived at approximately 9:00 AM, proceeded to the facility office to request access for an inspection, provided my identification, and met with Allen Kinsler (AK) who is the Process/Environmental Manager for the three Elm Plating plants that are located in Jackson. A pre-inspection conference was held with AK. I informed AK of my intent to conduct a facility inspection and to review the various records as necessary. I also informed AK of my intent to observe the stack test that was scheduled for that day. AK extended his full cooperation during the inspection, accompanied me during the full duration of the inspection, and fully addressed my questions.

Pre-Inspection Meeting

AK outlined that the Company is currently operating 3 shifts (24 hours) per day, 5 to 7 days a week.

AK outlined that they have two coating lines that apply high performance corrosion-resistant coatings to miscellaneous steel parts (e.g. fasteners, nuts, bolts.) The coatings are solvent or water based. Coatings are received from the manufacturer in 15 gallon totes and diluted (reduced) with organic solvent or water as appropriate prior to their application. In each coating line parts are loaded into a feed bin and conveyed into the dips-in coating section. In the dip-spin coating section, a steel basket containing the miscellaneous metal parts is submerged in a coating reservoir. The coating reservoir is then lowered and the basket is spun to remove excess coating from the surface of the coated parts. The excess coating is collected on the interior freeboard surface of the coating reservoir and gravity drains to the liquid level within the reservoir. The coated parts are then dropped to a conveyor that transports them through a two-zone curing oven and a cool down zone. At the exit of the cool down zone the parts are dropped to a final production collection bin.

The dip spin coating processes operate continuously; however, the dip spin coating reservoirs operate in a cyclic nature. A steel mesh basket is loaded with uncoated parts and the reservoir is raised so that the basket is below the liquid level. The reservoir is then lowered so that the base is above the liquid level and spun to remove excess coating from the parts. Excess coating accumulates on the interior freeboard surface of the coating reservoir and drains back to liquid level with the reservoir. The coated parts are unloaded onto a conveyor that transports the parts through the drying oven and then into the cool down zone. The conveyor is designed to disperse the parts on the conveyor so that the coated parts cure evenly in the oven. The cool down zone allows cured parts to cool prior to being packaged for shipment. Once the coated parts are dropped onto the conveyor, the dip-spin coating basket is repositioned in the coating section and loaded with the next batch of uncoated parts. Several batches (basket loads) make up a single order.

Each coating line exhaust process air from the: 1) Dip-spin coating booth, 2) Capture hood or tunnel installed over the conveyor, where the coated parts are dropped form the basket, 3)Curing Oven; and 4) Cool down zone. Solvent laden process air exhausted from the coating booths, conveyor hoods, and the curing ovens are combined and exhausted to the newly installed Ship & Shore Environmental Model No. SSE-30K-95X-RTO VOC emission control system (RTO). Process air exhausted from the cool down zones contains low concentrations of VOC than are exhausted directly to the ambient atmosphere. The RTO has a nominal design capacity of 30,000 SCFM.

Coating Line No. 1 (EU-DIPSPIN1) consists of two (2) dip-spin coating reservoirs followed by a natural gas fired conveyorized curing oven with two zones. The first oven zone (preheat) is heated with a 1.5 MMBtu/hr burner. The second oven burner (curing) is heated with a 2.5 MMBtu/hr burner.

Coating Line No. 2 (EU-DIPSPIN2) consists of one (1) dip-spin coating reservoir and a separate natural ga fired conveyorized curing oven with one zone. Parts are transferred approximately 25 feet from the dip-spin coating reservoir to the curing oven by robotic arm. The curing oven is heated with a 3.0 MMBtu/hour burner.

Note: The facility also operates a parts shot blaster and table blaster in conjunction with the dip-spin booths and ovens. Emissions from each blaster are ducted to a separate dust collector. The parts shot blaster is ducted to inside the plant; the table blaster is exhausted outside. Both processes are considered exempt from permitting per Rule 285. Some minor office heating equipment is also exempt per Rule 282.

AK indicated that larger capacity Line 1 is being operated all the time. Lower capacity Line 2 is rarely used mostly for overflow orders from Line 1. Both lines were operation at the time of the inspection/stack test. AK

estimated that emissions from Line 1 are using about 35 to 40% of the 30,000 SCFM rating of the RTO while Line 2 is only using about 4%. The Company has plans to get rid of Line 2 and install a new line in about a year from now and they are already in discussions with suppliers. (The RTO was purchased with this planned expansion in mind.) AK indicated that if the average temperature of the RTO drops below the set point, it will automatically cut the power to the ovens preventing the coating operation from proceeding. (Note: Much of the above process description came from PTI 113-16 permit application.)

Onsite Inspection

AK gave me a tour of the facility showing me both Line 1 and Line 2. Both lines were operating. (Safety glasses and hearing protection required.) Line 1 had a preheat oven temperature of 251 F in the first zone and 425 F in the second zones which were very close to the set points. Line 2(old line) had an oven temperatures of 247 F and 399 F in the different zones which was again very close to the set points. The water cooled shot blaster was in operation while the table blaster was not which is consistent with its only occasional use. Moderate VOC odors were prevalent through the facility. Overall, the draft was decent inward into the building and then outward via uncontrolled oven exhausts or controlled exhausts ducted to RTO. There was a open duct on the wall on the East side of building and another in the SE corner of the building that were pulling in building air and ducting it to the RTO. These ducts do not appear to have been described in the plant diagram depicted in the stack test plan in Attachment (7). Storage of paint/solvents appeared to be done properly with closed lids on everything and generally good housekeeping throughout. The RTO was operating just at or above the set point of 1500 deg F with a magnehelic pressure drop of -2.5". Per AK, the RTO has been operating continuously since August with only few times when it was idol mode due to the lines not operating. The RTO temperature that they use for compliance is the thermal couple that is in the center of the RTO. (Note: There is a photo in Attachment (8) that shows the control panel for the RTO and the 3 different temperature readings in the RTO. The one in the center of the panel determines compliance.) The area between the paint reservoirs and the oven in both Line 1 and Line 2 was open with local intake air vents which are probably undersized and likely the reason for the rather significant VOC odors through the building.

A roof inspection was conducted. See photos in Attachment (8). The roof was accessed via an enclosed ladder adjacent to the RTO outside the building. Some paint smell was noted and some very minor air leaks were also noted in some of the ducting near where vent sections were clamped together but overall the ventilation equipment on the roof was in good shape. Some bypass vents are in place. During start-up of the RTO, it is necessary to isolate the facility air in a way that allows start-up to proceed. There is a separate bypass duct just before the RTO that can be triggered in the event of a RTO failure. (AK stated that there have been no malfunctions since the RTO was turned on in August. The company they purchased the RTO from is also the same company they have hired to perform the required periodic maintenance.) More details about the bypass system are found in Attachment (2).

Each of the two ovens had both an intake exhaust and exit exhaust point generally with rain caps on them. Some air leakage was noted from probe holes from the line 2 oven exhaust stack. (Note: Both of the 2 ovens are controlled by the RTO except the cool down zone portion of each oven.)

Stack Test Observations

(Refer to Attachment (7) Test Plan for the verification of VOC capture and destruction efficiency associated with coating lines. Attachment (1) is a copy of all paint records including paper hand written facility production line forms for Monday January 16th and January 17th which shows what the paint/reducer usage was during the stack test which was held on January 17th. Attachment (8) contains some copies of photos taken during the stack test. Attachment (9) are copies of stack tester data sheets filled out during the test.)

Derenzo Environmental Services were on site conducting stack testing. The stack testing team was being led by Andy Rusnak. Representing the AQD was Mark Dziadosz who arrived shortly after I arrived. (He planned on staying for at least 2 full runs and promised to send me a follow-up email on his observations and first thoughts.) A stack testing trailer was located outside adjacent to the RTO. Derenzo started initial testing at 10:40 AM. They planned on doing three 2 hour runs for capture efficiency. For destruction efficiency, they planned on doing three 1 hour runs at the same time with the first hour of each capture efficiency test concurrent with the destruction efficiency test. Start-up of the stack testing was delayed due to lack of sufficient VOC loading due to the start-up time of the coating process and cyclic nature of it. (AK didn't know how long it takes a metal part to go through the entire coating process.) Prior to start-up of the stack test, VOC readings were 13.6 ppm out one of the uncontrolled oven stacks, about 48 ppm going into the RTO and less 0.5 ppm to 0 ppm after the RTO. The stack plan requires that during the test, they test the uncontrolled oven exhaust from Line 2 for the first hour and

then test the uncontrolled oven exhaust from Line 1 for the second hour of the capture test and average the 2 readings together in some way based on calculated ACFMs etc. Preliminary numbers that I observed during the first run suggested that they will have no problem passing the destruction efficiency tests. However, it appears they may have trouble meeting the required PTI capture limit of 92% mostly due the lack of high VOC loading into the RTO. During the first run, the VOC loading did increase at least briefly to over 200 ppm but did not maintain those levels for very long. I told AK that if they fail the capture test, this will be violation of their PTI and Consent Order and it would be important that they diagnosis the problem quickly and retest as soon as possible thereafter. AK suggested that if necessary, they could increase the static pressure to the RTO which should translate into higher capture efficiency. Note: The consultant did a smoke test that confirmed air flow inward into the building was satisfactory.

After the inspection, I received the following emails from AQD staff person Mark Dziadosz that further highlighted my concern about the capture efficiency test. The emails are in oldest to newest order.

"Mike,

Yes you are correct. The average from the 3 runs needs to be 92% and with the first run at 90% the last 2 runs would need to be 93% or higher. I would not expect that to happen. Allen Kinsler stopped by the trailer after the first run and is aware that they were not meeting the 92% CE.

From: Kovalchick, Mike (DEQ)

Sent: Wednesday, January 18, 2017 8:48 AM

To: Dziadosz, Mark (DEQ); Miller, Scott (DEQ)

Subject: Re: Elm Plating stack test

Mark,

Thanks. So they need to average 92% capture over the three runs to pass. That would mean that final 2 runs would have to be about 94% to pass assuming your 90% capture calculation is correct for the first run so I assume they are going to fail.

From: Dziadosz, Mark (DEQ)

Sent: Wednesday, January 18, 2017 7:33:36 AM

To: Kovalchick, Mike (DEQ)

Subject: RE: Elm Plating stack test

Mike,

I stayed for the first run and half of the CE 2nd run. CE was ~90% and DE was ~99% for run 1. The average VOC ppm to the exhaust was about 97 and approximately 9 ppm to each cool down zone. The loading during run 2 seemed to be getting better (approximately 125 ppm) but I was still calculating they would be about 90% for the CE. Feel free to call me to discuss.

Mark Dziadosz"

Recordkeeping Review

AK indicated in the pre-meeting that most of the records for the facility were being kept at his office which is located at Plant 1. I told him that I would send him an email requesting the records when I got back to the office. The requested records were obtained on Wed 1/18/2017.

Attachment (1) PDF Copy of all paint records including paper hand written facility production line forms for Monday January 16th and January 17th

Attachment (2) RTO Manual

Attachment (3) MSDS's for coatings/thinners used since September 1, 2016

Attachment (4) Elm Plating Company Malfunction Abatement Plan

The malfunction abatement plan was reviewed and found to be adequate.

Attachment (5) Required VOC/HAP usage records and emission calculations.

The records show compliance. In December, VOC controlled emissions were 0.15 tons and 0.0004 tons of HAPs. (Note: The 12 month rolling average still shows non-compliance as it averages in the months prior to when control was turned on back in late August.) They are using about 1000 gallons of coating per month and about 200 gallons of reducers.

Attachment (6) Preventive Maintenance Log sheets for RTO.

Attachment (7) Test Plan for RTO stack test. (Note it also contains building and stack layout diagram.)

Attachment (8) Copies of various photos taken during the inspection. Includes pictures of the ventilation equipment on the roof, pictures related to the actual stack test, pictures of the 2 coating lines, and pictures of read outs from the ovens and RTO control panel.

Attachment (9) Copies of log sheets stack testers were using during the test. The 2 sheets are for Test #1. They are gas velocity measurement data for the uncontrolled cool down stacks from Line 1 and Line 2.

Permit Condition Compliance Review

I reviewed all permit conditions for FG-DIPSINS. The Company is in compliance with all Emission limits, Material limits, Process/Operational Restrictions, Design/Equipment Parameters, Testing/Sampling, Monitoring/Recordkeeping, Reporting, Stack/Vent Restrictions, Other requirements with the following exceptions:

The Company is out of compliance with its 14.9 TPY VOC 12-month rolling time period emission limit. The violation has been previously documented and is what necessitated the installation of the RTO back in August 2016. Now that emissions are controlled, the Company will be back into compliance with this limit in the near future.

The Company is probably out of compliance with FG-DIPSIPINS IV. DESIGN/EQUIPMENT PARAMETERS Condition 1. ..."Satisfactory operation of the thermal oxidizer includes a minimum VOC capture efficiency of 92 percent (by weight)". The first test run of the stack test that was conducted on January 17, 2017 had preliminary numbers in the 90% range and it appeared unlikely that the 2 subsequent runs would be good enough to make up for first run when all 3 runs are averaged together.

I reviewed all permit conditions for FG-FGFACILITY. The Company is in compliance with all Emission limits, Material limits, Process/Operational Restrictions, Design/Equipment Parameters, Testing/Sampling, Monitoring/Recordkeeping, Reporting, Stack/Vent Restrictions, and Other requirements.

Post-Inspection Meeting

I held a brief post-inspection meeting with AK. I didn't give him a tentative compliance report since I hadn't seen/reviewed the required records for their PTI. However, I did indicate that I had concerns about stack testing failing for capture efficiency. I further stated that I would be sending an email requesting the records later in the day. I thanked AK for his time and cooperation, and departed the facility at approximately 11:30 AM.

Compliance Summary

Based upon the facility inspection, review of the records, and review of applicable requirements, the Company was potentially out of compliance with their 92% VOC emission capture efficiency requirement for the RTO based on limited preliminary test results. Compliance status with this requirement will be determined when a formal stack test report is submitted to the AQD for review in the next month or so. Noncompliance with this requirement would be considered a violation of their Consent Order and a Violation Notice will be sent to the Company if necessary. The Company is also out of compliance with their 14.9 TPY VOC emission limit based on a 12-month rolling time period as determined at the end of each calendar month. However, this is due to the fact that emissions were uncontrolled prior to August 26, 2016. Now that emissions are controlled, the 12 month rolling average will obtain compliance in the near future. This is not a new compliance concern and no new

enforcement action is necessary. Otherwise, the Company is in compliance.

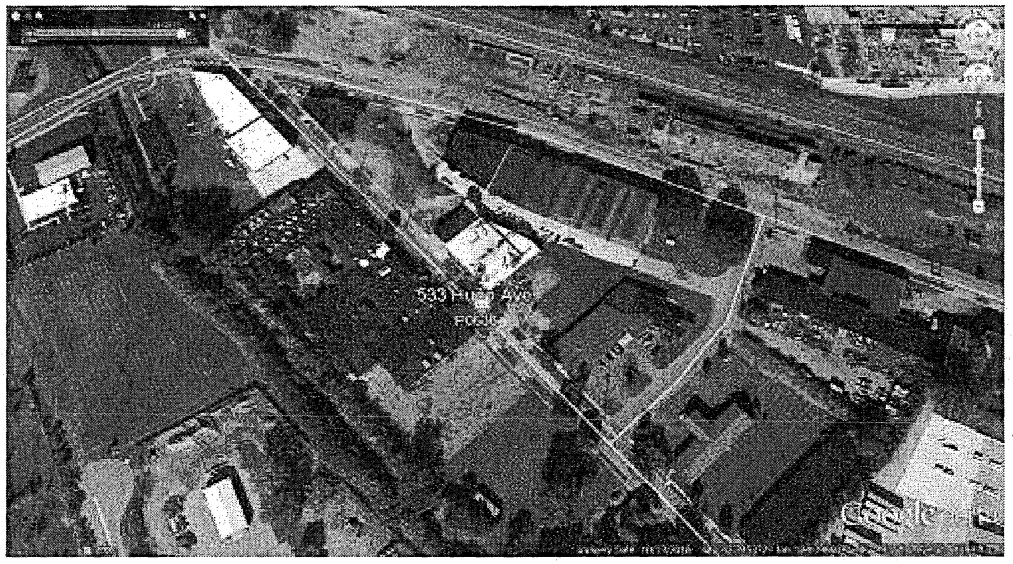

Image 1(Aerial Photo) : Aerial Photo of Elm Plating

NAME M. Kowalchuk DATE 1/31/2017 SUPERVISOR