

P0687
MANILA

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

P068748040

FACILITY: Advance Engineering Co.	SRN / ID: P0687
LOCATION: 7505 Baron Drive, CANTON TWP	DISTRICT: Detroit
CITY: CANTON TWP	COUNTY: WAYNE
CONTACT: Eric Lehr , Asociate Services Manager	ACTIVITY DATE: 05/07/2019
STAFF: C. Nazaret Sandoval	SOURCE CLASS: SM OPT OUT
SUBJECT: Targeted Inspection for FY 2019	
RESOLVED COMPLAINTS:	

SRN: P0687**Source Name:** Advance Engineering Company (AEC)**Facility Address:** 7505 Baron Drive, Canton, MI 48187**Inspection Date:** March 7, 2019 and May 7, 2019**Inspected By:** Nazaret Sandoval**Contact:** Eric Lehr, Associate Service Manager

elehr@adveng.net / (313) 537-3500 Ext. 1055

Harold Kirk, Materials Planning and Logistics Manager

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Website: www.adveng.net**FACILITY INFORMATION**

Advance Engineering Co. (AEC) in Canton is dedicated to precision metal stamping. Their capabilities include deep draw and eyelet stamping, progressive die stamping, and line die stamping. The plant has a range of industrial presses with capabilities ranging from 50 to 400 tons of force combined with robotic spot and metal inert gas (MIG) welding operations.

To maximize efficiency and to enhance quality, AEC consolidated their business operations into one location in Canton, MI. The building located at 7505 Baron Drive, Canton, MI 48187 is the company's Corporate Headquarters.

The production at the Canton facility started around the third quarter of 2014 with the merge of the Redford (MI), and Northwood (OH) operations. The Redford facility closed its operations around November of 2014 and the plant at Northwood shut down around September of the same year. Most of the stamping presses in Canton came from the Redford site. AEC added a warehouse in Canton to accommodate the distribution, packing, and assembly operations that were handled in Oregon, OH. The operations at the warehouse started the first quarter of 2017. AEC has another facility in Beaverton, MI which is dedicated to thermoforming operations.

The facility operates 5 days a week, with two shifts of 8 to 10 hours per day. The cleaning/tumbler area operates one shift (8-10 hr. /day) or as needed.

REGULATORY BACKGROUND

On April 13, 2016 AQD received a permit application from AEC for the relocation of existing

metal parts cleaning equipment and other exempt equipment used at their former facilities. The Redford facility, which operations closed around November of 2014, operated under exemption from Permit to Install (PTI) and relied on Rule 208a registration to remain minor for Title V/Renewable Operating Permit (ROP) purposes.

With the move to Canton and Rule 208a being rescinded, a re-evaluation of the process operations at the new facility was deemed necessary to determine compliance status with the requirements cited in Rule 201.

In the permit application the company claimed exemptions from Rule 201 requirements to obtain a PTI for most of the equipment operating at the Canton facility. The operations qualifying for exemptions are discussed later in this report.

During the review of the permit application, it became apparent that, based on the cleaning solvent throughput stated in the permit application, Rule 278 might exclude the exemptions for the part cleaners. The company requested an opt-out permit to address the VOC emissions.

PTI No. 64-16 was issued by AQD to AEC on May 13, 2016. The permit includes enforceable limits for VOC, individual hazardous air pollutants, and aggregate hazardous air pollutants, which have been accepted to restrict the facility's potential to emit (PTE) to less than the major source threshold to opt-out of the ROP. In addition, the facility has restricted usage rate for the cleaning solvent. For the specific permit limits, please refer to the compliance evaluation section of this report.

INSPECTION NARRATIVE

On March 7, 2019 at 9:30 AM I arrived at the headquarters of AEC located at 7505 Baron Drive, Canton, MI 48187 to conduct an inspection. I was received by Mr. Eric Lehr, Associate Service Manager at AEC. Mr. Eric Lehr is the assigned staff person at AEC who will be dealing with AQD issues; he replaced Mr. Rick Kenger.

After the introductions, I stated the purpose of the inspection. The purpose of the inspection is to evaluate the facility's compliance with respect to the requirements of the federal Clean Air Act; Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), and the conditions of PTI No. 64-16.

Before proceeding to the tour of the facility I asked Mr. Lehr if there have been any updates and/or changes in the operations at the facility. I asked him to describe the various operations occurring at the building. He indicated that there have not been any changes in their operations since the inspection conducted on 3/22/2017. He handed out a very detailed layout of the plant which shows all the presses and supporting operations. A copy of the drawing is attached to the report in AQD facility files.

I brought with me a copy of the plant layout that had been provided to me during the last inspection conducted in March 2017. I pointed out that in my last inspection I noticed that there were some containers that had been relocated to the Parts Washing Area, but the drawing did not show the new location and the plant layout needed to be updated to reflect those changes. He said that he will take care of it and will email me an updated drawing. I received the updated plant layout on April 1, 2019. A copy is attached to this report.

The building is divided in three sections from the Baron Drive Entrance. From North to South: Building No. 1 (B1), Building No. 2 (B2), and Building No.3 (B3).

The automatic presses, loading docks and quality control rooms are in B1. The eyelet presses and welding operations lineup along B2, from west to east.

The tool area, maintenance, wastewater treatment and the tumble/wash area are in the east side of B2.

The plant makes specialty stamping for industry from various types of sheet metals, which is stamped into various configurations to meet industries demands. Cutting oils are used in order to facilitate the stamping process. The finished stampings are then washed to remove any oil or small metal burns. Depending on the workpiece material and the type of cutting fluid used during the stamping process, the oil from the finished product is removed by washing the parts using detergent (water-based fluids) or using flash-solvents (VOC containing fluids).

The facility has four types of parts washers:

- a) Belt style parts washing system – This system uses a conveyor belt where the metal parts are placed in baskets. Hot soapy water is sprayed over the parts as the basket moves along the conveyor. The conveyor is preceded by a staging area where the baskets are filled before entering the conveyor. After the wash, rinse, and air-dry cycles the parts are collected at the other side of the conveyor belt.
- b) Ultrasonic parts washer – The dirty parts are immersed in a cleaning tank that holds an aqueous-based cleaning fluid. Ultrasonic cleaning uses ultrasonic energy to assist in the removal of soiled parts. The ultrasonic system works by inducing controlled cavitation in the cleaning fluid. Cavitation refers to microscopic voids or "bubbles" that form when a transducer emits enough ultrasonic energy into the fluid. The cavitation bubbles form relatively slowly and then collapse suddenly, releasing energy against the surfaces of objects immersed in the tank that 'scrubs' hard to remove soils from the parts.
- c) Rotary parts washer – This equipment is designed to wash parts in a volumetric basis. This equipment uses water-based alkaline solutions. There are two zones for cleaning, the solid stage (soak) and the perforated (rinse/drain) area. The drum is rotated in a reverse mode with the parts submerged in the alkaline solution. Once the parts have gone through the complete cycle, (wash, rinse and drying) the parts are discharged through a helix portion of the drum which is located at the opposite extreme where the parts are fed. The oil that leaks from the parts into the cleaning solution is skimmed and the cleaning solution is reused several times for various cleaning cycles. Air from the facility is accelerated to warm it up, and in the last portion of the rotary drum the parts are dried using warm air (at about 100 °F) which comes out from a series of nozzles. The alkaline solution is heated at the bottom of the drum at about 162 to 172°F with indirect heat generated by burning natural gas. There is a stack from the equipment that extends to the roof and goes to the atmosphere which seems to vent the exhaust mist (water steam) generated during the cleaning process.
- d) Four tumblers - This is a batch process used to clean parts with a solvent that is a mix of Petroleum Hydrocarbons commonly known as "142 Flash Solvent". The tumblers can also be used to clean parts with water-based solvents (i.e. detergents).

The parts washers described above are located at the South-East corner of B2 near the returnable packing storage area. Likewise, the solvents and mineral oils stored in drums and containers are in the same area to facilitate the transfer and disposal operations. There is an adjacent roll up door on the east side for easy access of the trucks that pump-out spent solvent and wastewater from the holding tanks once a week.

There are (2) tanks for the storage of fresh flash-solvent. The tanks are painted in red and have a label that reads "142-flash solvent". One of the tanks is a horizontal cylinder of approximately 350 gallons and the other one is a 500-gallon vertical cylinder. On the west side and adjacent to the vertical cylinder there is bulky square white container of approximately 275 gallons that holds a floor degreaser, labeled as Chempet 6512.

The used flash solvent is “exclusively” stored in a vertical 500-gallon holding tank which has been labeled as “only for used flash solvent”, located in the same area near the floor-degreaser container. This wasted solvent is hauled away by a contractor that reclaims solvent.

There are various 55-gallon drums which are used to collect and store wastewater and/or used oil from various plant operations (except for the used flash solvent). From the 55-gallon containers the waste is pumped into a 1,000-gallon holding tank or into a backup 500-gallon holding tank. The mixed waste is pumped out from the holding tanks and it is hauled away once a week by an outside company for off-site disposal.

Surface grinders with dust collectors are located at the northeast corner of B2. The grinders are used to polish fabricated metal parts and to remove rough edges. Particulate from the grinders is collected using a hood system and vacuum blower fed to a dust collector. The unit, labeled as “Dustkop and Mistkop” manufactured by AGET, comes with a filter and the ductwork vents inside the facility. The waste collected is disposed or recycled. The dust collector appeared in good working conditions. The equipment was not in-use when I walked by this area of the facility.

The facility has a Natural Gas Fired Heat Treating Furnace that can operate to a maximum temperature of 2000 °F. This furnace is located near the tool area at the northeast corner of building 2 and it is used to harden steel parts. It is identified as a “Lucifer Model DL7GF-K24” with a maximum Heat Input Rate of 125,000 BTU per hour.

The warehouse and the loading docks are on B3.

The facility does not have emergency generators, boilers or area heaters.

The air emissions from this facility are mostly VOCs from the part-cleaning operations using flash-solvent. The facility reclaims solvent after the parts are washed. The facility holds the used solvent in a dedicated tank until the hauling company pumps it out.

I asked Mr. Lehr if there have been any changes in the chemicals used at the facility in the parts washer's processes or at any other activity that could potentially generate air pollutants. The Safety Data Sheets (SDS) of the chemicals used at the plant (i.e. cutting oils, flash-solvent, etc.) need to be on file and updated when changes occur. Mr. Lehr said he'll check on that. I asked for the records of the flash solvent usage for year 2017 and 2018. Mr. Lehr handed out to me a summary table that tracked the purchase orders and the total gallons of flash-solvent the company had bought from the supplier during calendar years 2018. He also provided a summary table showing the quantities (i.e. gallons) of waste water + oil, and the quantities of mineral spirit (i.e. flash-solvent) that were disposed and hauled by the hauling company in 2018. I requested the same information for year 2017.

Other records and/or information requested at the inspection meeting included: chemical inventory identifying the specific fluids/chemicals that are used at each one of the parts-cleaning equipment available in the parts-washers area, clarification about the number and sizes of the containers/holding tanks in that area, plant layout update, SDSs (determine if update is needed), tracking records to substantiate the amounts of used solvent, natural gas usage at the heat treating furnace and the rotary drum part washer , solvent usage and VOCs emissions calculations at the end of each month based on a 12-month rolling for years 2017 and 2018.

During the closure meeting I indicated that a final determination of compliance with the air quality regulations and permit requirements will be provided in the inspection report after a further evaluation of the records and permit conditions.

I left the building at about 1:00 PM.

E-mail messages were sent to Mr. Lehr during the days following the inspection reminding him about the outstanding items he needed to provide to AQD to complete the compliance inspection. Mr. Lehr provided some of the records via email, as listed below on the cited dates:

- Natural gas usage records were received on 3/20/2019.
- Flash solvent usage and waste disposal records for year 2018 and the updated plant layout received on 4/1/2019.
- The invoice records for flash solvent purchases corresponding to years 2017 and 2018 were provided on 4/11/2019.

All the records provided by Mr. Lehr are in the Appendix of this report.

During the writing of this inspection report and as I continue asking Mr. Lehr for a response to the outstanding issues, I noticed a major delay in his response. The delay occurred when I asked for the backup records to substantiate the amount of solvent recovered in 2018. This amount is tracked in the summary sheets under a column labeled "Disposal of Mineral Spirit". I requested those records because in year 2017 there were some discrepancies showing volumes of recovered solvent that were higher than the actual solvent purchased.

On 4/18/2019 Mr. Lehr informed me that Mr. Harold Kirk has been assigned as the new contact person from AEC to deal with the AQD permit compliance issues. On 5/1/2019, Mr. Lehr officially indicated that I should direct my communications to Mr. Kirk. Mr. Lehr stated that Mr. Kirk is the MP&L Manager (Materials Planning and Logistics) at Advance Engineering. The MP&L department controls the process that includes the purchases and disposal of the solvent used at the facility for the cleaning of parts.

On 5/3/2019 I contacted Mr. Kirk and left him a voice message explaining the situation. I also sent him a follow-up message with a detailed explanation. The email included a copy of the current PTI and the supporting documents I would discuss with him. On 5/6/2018 I discussed the issues over the phone and I set-up an appointment with him to visit the facility on 5/7/2019. I also sent him a summary of the outstanding issues which I intended to address on the meeting with him on 5/7/2019.

On 5/7/2019 I met with Mr. Kirk at about 2:20 PM. After a brief conversation where I explained the purpose of AQD inspections and the permit requirements, I went over the list of outstanding issues. We discussed the issues related to the flash-solvent usage and recovery. Mr. Kirk indicated that there is a possibility that the tank that holds the "used solvent" is still receiving mixed waste and not only "used solvent" which justifies the carry-out of additional water. At the time of the visit he couldn't provide the "Waste Manifest" but he suspects that there might be some errors. He clarified the size of the tanks and verified the content of each tank. I showed him the SDSs that were provided in the year 2017. Mr. Kirk indicated that he believes there have not been any changes in the chemicals used for cleaning parts but will verify.

I advised Mr. Kirk that PTI 64-16 requires AEC to maintain clear records of the part-washing operations. I asked him to complete the table I had sent to Mr. Lehr. The table identifies each one of the parts-cleaning units. I asked Mr. Kirk to add the details involving the operations (i.e. identify fluid/chemicals used in each part-washer, identify the SDS-Manufacturer, VOC content and briefly describe storage of waste/or disposal). Once the table is completed, he should email it to me, and we will keep it in our files. Mr. Kirk completed the table and sent it to me via email on 5/21/2019. The information he provided also confirms that there have been no changes in the type of solvents used at the facility.

The final point of our discussion was about the monitoring and recordkeeping procedures. I

showed Mr. Kirk the spreadsheet I have developed after the inspection I conducted at AEC in 2017. I have provided the spreadsheet electronically to Mr. Rich Kengel (the former AQD compliance liaison at AEC). The excel form was designed to help the facility with the tracking of their monthly solvent usage and the calculations of the VOC emissions on a 12-month rolling basis at the end of each month; and if used as suggested, would assist AEC in maintaining compliance with the VOC emissions and material limits specified in the PTI. However, It appears as if the 12-month rolling records for solvent usage and estimated VOCs emissions remain unavailable. Only the monthly and annual totals for solvent purchases were provided.

COMPLIANCE EVALUATION WITH PTI No. 64-16

The following conditions apply to FGFACILITY

I - Emission limits

TABLE No 1 – Emission Limits Evaluation

After a detailed review of the solvent-purchase records and the tracking of solvent disposal, AQD determined that there are uncertainties in the procedures involving solvent recovery. Therefore, since we can't assure the accuracy of the amounts of fluid recorded as disposed of mineral spirit (i.e. flash solvent recovered), the total amount of flash solvent purchased has been used as the net amount of flash solvent to estimate the VOC emissions. Refer to the attached excel spreadsheet for the recorded monthly values and the 12-month rolling calculations for period from 2016 to 2018.

For the evaluated period, the highest VOC emissions in a 12-month rolling time was 30.57 tons per year (tpy), recorded at the end of April of 2017.

Pollutant	Limit	Time Period / Operating Scenario	Monitoring Method According to	Facility Records	Is the facility in compliance (YES or NO)
1. VOC	40 tpy	12-month rolling time period as determined at the end of each calendar month	SC VI.2	Calculated using monthly records and assuming 100% VOC in the solvent and no solvent recovery	YES
2. Individual HAP	Less than 9 tpy	12-month rolling time period as determined at the end of each calendar month	SC VI.3	According to the SDS there are not HAPs in the solvents used at the plant	YES
3. Aggregate HAPs	Less than 22.5 tpy	12-month rolling time	SC VI.3	According to the SDS	YES

	period as determined at the end of each calendar month		there are not HAPs in the solvents used at the plant	
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II – Material Limits

Table No. 2 - Material Limits Evaluation

Material	Limit	Time Period / Operating Scenario	Monitoring Method According to	Facility Records	Is the facility in compliance (YES or NO)
1. Net cleaning solvent used ^A	11,940 gallons per year	12-month rolling time period as determined at the end of each calendar month	SC VI.2	9130 gallons per year Assuming no solvent recovery	YES

A “Net cleaning solvent used” means the difference between the amount of fresh cleaning solvent introduced to facility operations and the amount of spent cleaning solvent reclaimed/recovered.

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. N/A

There have been less than five year since the permit was issued

Evaluation of the Monitoring Requirements

1. The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor by the last day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition.

Non-Compliance - The facility failed to provide the calculations required by this special condition. However, AQD assisted AEC in fulfilling this condition by developing an excel spreadsheet. The spreadsheet was designed to help AEC with the tracking of their monthly solvent usage and the calculations of the VOC emissions on a 12-month rolling basis at the end of each month. AQD used the purchase records for the period from 2016 to 2018 and calculated the values required by the permit.

2. The permittee shall keep the following information on a monthly basis for FGFACILITY:
 - a. Gallons or pounds of each VOC containing material used.

In compliance – The flash solvent is the only fluid used at the facility containing VOC. The flash-solvent purchase order information was provided for calendar years 2017 and 2018. The facility assumed 100 % VOC in the flash solvent. The Safety Data Sheets (SDS) for “142 Flash Solvent” was provided in the previous inspection and there have been no changes. Records are in file.

b. Where applicable, gallons or pounds of each VOC containing material reclaimed.

N/A – For the evaluated period, the facility has been unable to calculate the reclaimed solvent amount due to deficiencies in the procedure that is followed for tracking the storage of the used flash-solvent. Therefore, AQD is assuming the worst-case scenario and the total gallons of fresh solvent has been reported as “net cleaning solvent”.

c. VOC content, in pounds per gallon or pounds per pound, of each VOC containing material used.

In Compliance –The flash-solvent density values is reported on the SDS. The value used in the calculations is 6.697 pounds per gallon.

d. VOC emission calculations determining the monthly emission rate of each in tons per calendar month using mass balance or an alternate method acceptable to the AQD District Supervisor.

e. VOC emission calculations determining the annual emission rate of each in tons per 12-month rolling time period as determined at the end of each calendar month using mass balance or an alternate method acceptable to the AQD District Supervisor. For the first month following permit issuance, the calculations shall include the summation of emissions from the 11-month period immediately preceding the issuance date. For each month thereafter, calculations shall include the summation of emissions for the appropriate number of months prior to permit issuance plus the months following permit issuance for a total of 12 consecutive months.

Compliance (d. and e.) - The highest calculated VOC emission rate on a 12-month rolling time period was 30.57 tons per year, recorded at the end of April 2017.

3. The permittee shall keep the following information on a monthly basis for FGFACILITY:

a. Gallons or pounds of each HAP containing material used.

b. Where applicable, gallons or pounds of each HAP containing material reclaimed.

c. HAP content, in pounds per gallon or pounds per pound, of each HAP containing material used.

d. Individual and aggregate HAP emission calculations determining the monthly emission rate of each in tons per calendar month using mass balance or an alternate method acceptable to the AQD District Supervisor.

e. Individual and aggregate HAP emission calculations determining the annual emission rate of each in tons per 12-month rolling time period as determined at the end of each calendar month using mass balance or an alternate method acceptable to the AQD District Supervisor. For the first month following permit issuance, the calculations shall include the summation of emissions from the 11-month period immediately preceding the issuance date. For each month thereafter, calculations shall include the summation of emissions for the appropriate number of months prior to permit issuance plus the months following permit issuance for a total of 12 consecutive months.

The permittee shall keep the records on file at the facility, in a format acceptable to the AQD District Supervisor, and make them available to the Department upon request.

Compliance comments (a. to e. above):

Based on the information received by the company (i.e SDS) which are in AQD files, it appears as if the plant does not use HAPs.

PERMIT TO INSTALL EXEMPTIONS

During the permit application process the facility indicated that there were some equipment and/or operations exempt from permitting. To determine if the facility is in fact eligible for the specific exemptions listed in R 336.1280 to R336.1290 I conducted an evaluation during the plant inspection. From my observations I confirmed that the following emission units are exempt from permitting based on the rules cited below:

- 1) Lucifer Natural Gas Fired Heat Treating Furnace with maximum heat input rate 125,000 BTU per hour - R 336.1282(2)(a)(i). Furnaces for heat treating using natural gas with maximum total heat input less than 10 MBtu per hour. Natural gas usage records are kept. – A copy is attached for the overall facility.
- 2) Combustion of natural gas occurs at the Rotary Drum Parts-Washers. Indirect heating is used to warm-up the alkaline solution used in the equipment – R 336.1282(2)(b)(i).
- 3) Stamping Presses - R 336.1285 (2)(l)(i).
- 4) Welding Equipment - R 336.1285 (2)(i).
- 5) Portable Torch Cutting Equipment used for repairs - R 336.1285 (2)(j).
- 6) Parts Washers – R 336.1285 (2)(r)(iv)
- 7) Dust Collector System serving the surface grinders - R336.1285 (2)(l)(vi) (B).
The equipment has emissions that are released only into the general in-plant environment.

The specific language for the rules cited above is referred on the “PTI Exemption Handbook”.

In a letter of 4/11/2016 Advance Engineering Company submitted a complete inventory of equipment at the facility, with associated Rule 201 exemption information and Potential to Emit (PTE) calculations. The document demonstrated that R 336.1278 does not apply to the cited process or process equipment. A copy of the information is in the permit file for PTI No.64-16.

MAERS (Michigan Air Emission Reporting System)

The facility received a dunning letter as a reminder of their failure to submit the MAERS report, which was due on 3/15/2019. The report for the emission period from 1/1/2018 to 12/1/2018 was submitted online on 4/2/2019, after the due date.

AQD review the report. The records showed that the parts washer's throughput for calendar year 2018 totaled 5,060 gallons. AEC reported a disposed amount of solvent equal to 3,450 gallons, for a net usage of 1,610 gallons. This translated into total VOC emissions of 10,782 pounds per year (approximately 5.39 tpy).

The usage of flash solvent decreased in 20% with respect to year 2017. VOC emissions reported in 2018 can't be compared with last year's emission because the company did not report reclaimed solvent in 2017.

The reported solvent usage and VOC emissions were found to be within the permit limits and AQD passed the audit. AQD will be requesting the records to substantiate the reclaimed solvent reported values because there are uncertainties about the accuracy of the recorded values.

CONCLUSION

Based on the inspection conducted on March 7, 2019 and the follow up visit on May 7, 2019 AQD found that the monitoring/recordkeeping and calculations procedures were somewhat deficient. Although AEC maintains monthly records of solvent usage, the 12-month rolling usage and the VOC emissions are not tracked. In addition, deficiencies in the handling of the flash solvent recovery activities are apparent. However, based on purchase orders for the flash solvent from 2016 to 2018, and assuming none was reclaimed, AQD was able to generate the permit required information to complete the evaluation. The results show compliance with the material and permit limits dictated by PTI 64-16. The facility is considered to be in substantive compliance with its applicable requirements.

NAME S. Handoval

DATE 9/24/2019 SUPERVISOR JK