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

B780072434		
FACILITY: NITRO-VAC HEAT TREAT INC.		SRN / ID: B7800
LOCATION: 23080 DEQUINDRE, WARREN		DISTRICT: Warren
CITY: WARREN		COUNTY: MACOMB
CONTACT: Bill Stomber , President, Plant Manager		ACTIVITY DATE: 06/26/2024
STAFF: Owen Pierce	COMPLIANCE STATUS: Compliance	SOURCE CLASS: Minor
SUBJECT: FY 24 Inspection Report		
RESOLVED COMPLAINTS:		

On June 26, 2024, I (Owen Pierce EGLE - Air Quality Division) performed a scheduled targeted inspection of Nitro-Vac Heat Treating Inc. located at 23080 Dequindre, Warren, Michigan. The purpose of the inspection was to determine the facility's compliance with the Federal Clean Air Act; and Article II, Part 55, Air Pollution Control of Natural Resources and Environmental Protection Act, 1994 Public Act 451 and the conditions of Permit to Install (PTI) No. 307-04. Upon arrival, I met with Bill Stomber, President and Co-Owner, and conducted a pre-inspection meeting where I introduced myself, presented my credentials, and stated the purpose of the inspection.

During the pre-inspection meeting, Bill explained the facility's processes and equipment. Nitro-Vac is a metal heat treating company that conducts vacuum heat treating of miscellaneous metal parts, for customers in the commercial aerospace industry as well as for military aircraft parts. Nitro-Vac, is permitted to operate one vacuum internal quench furnace consisting of an electric vacuum furnace followed by a vacuum oil quench (EU-Furnace4), and one batch electric salt pot furnace, followed by an oil quench dip tank (EU-Furnace22).

The facility has approximately 12 employees and normally operates 2-3 shifts a day for 24 hours a day, five days a week (approximately 8:00am Monday - 12:00 noon Saturday), depending on their work demand. According to Bill, there have been no recent process or equipment changes. Non-permitted equipment includes two sand blasting units, a parts washer, and additional heat treating furnaces that do not use an oil quench. According to Bill, there are no boilers, generators, or cold cleaners at the facility. Following the pre-inspection meeting, Bill lead me on a walk-through of the facility.

Facility Walk-through Observations

During the facility walk-through, I observed both permitted emission units and neither emission unit was in operation during the inspection. Bill showed me EU-Furnace4, and explained that the parts are placed in the furnace which is then vacuum sealed using an electric pump. The parts are then raised to the upper chamber where they are heated to a certain temperature and then lowered in the oil quench in the chamber below. Parts are washed in a parts washer to remove any residual quench oil. EU-Furnace4 is equipped with a cartridge filter used to remove oil mist from the furnace exhaust prior to discharge to the atmosphere through stack SV-S4. According to Bill, the cartridge is changed every three to four years.

Next, Bill showed me EU-Furnace22. Here, parts are lowered into the salt pot furnace that contains molten sodium cyanide salt as the heat treat medium. Following the heating cycle, the parts are taken out of the molten salt and placed into the adjacent oil quench tank. Finally, parts are washed to removed any residual quench oil to complete the process.

Heat Treating Furnaces

In addition to the permitted equipment, I observed several small electric furnaces and a couple of electric vacuum heat treating furnaces that use inert gases such as nitrogen and argon, instead of oil, to quench the heated metal parts. The small electric heat treating furnaces and electric vacuum heat treating furnaces that use inert gases for quenching are exempt from the requirement to obtain a permit to install per R336.1282(2)(a)(i) because they are furnaces for heat treating that are electrically heated and do not involve ammonia, molten materials, oil-coated parts, or oil quenching.

Sand Blasting Equipment

During the facility walk-through, I observed two portable, fully enclosed, sand blast units used to clean metal parts. The sand blast units are exempt from the requirement to obtain a permit to install per R336.1281(2)(d) because they are equipped with appropriately designed and operated enclosure and control equipment.

Parts Washer

I observed that the facility has one parts washer that utilizes soap and water to clean metal parts, and it is exempt from the requirement to obtain a permit to install per R336.1281(2)(k) because it is an aqueous based parts washer.

PTI No. 307-04 Compliance Evaluation

FG-Quench

The facility was issued PTI No. 307-04 for one vacuum internal quench furnace consisting of an electric vacuum furnace followed by a vacuum oil quench, and one batch electric salt pot furnace, followed by an oil guench dip tank. Required records were submitted to AQD staff during the inspection by Bill Stomber, President and Co-Owner. Records can be located internally at the following link: S:\Air Quality Division\STAFF\Owen Pierce\FY 24\Nitro-Vac Heat Treat.

Special condition (SC) 1.1 sets the PM emission limit at 1.4 tpy based off a 12-month rolling time period as determined at the end of each calendar month, and SC 1.3 states that the permittee shall calculate the monthly PM-10 emission rate for FG-Quench using a material balance on the net usage of quench oil. According to the submitted records, PM emissions were below the 1.4 tpy limit for all months from 2019 - 2023. The highest PM-10 emissions recorded were 0.29 tpy in December of 2019.

SC 1.2 states that the permittee shall not use more than 360 gallons of quench oil in FG-Quench per 12month rolling time period as determined at the end of each calendar month. The amount of guench oil used shall be determined on a "net usage" basis. "Net usage" is defined as the amount of quench oil added to FG-Quench to bring quench oil levels up to starting levels less any amount of quench oil reclaimed or removed as waste. According to the records from 2019-2023, quench oil usage was below the 360 gallon limit for all months with the highest usage of 82.56 gallons occurring in December of 2019.

Conclusion

Based on the information obtained during the inspection, Nitro-Vac Heat Treating Inc. is in compliance with the conditions and requirements in PTI No. 307-04.

NAME Ouren Purce

DATE 7/10/2024 SUPERVISOR K. Belly