

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

B181455181

FACILITY: Metallurgical Processing LLC		SRN / ID: B1814
LOCATION: 23075 Warner Ave., WARREN		DISTRICT: Warren
CITY: WARREN		COUNTY: MACOMB
CONTACT:		ACTIVITY DATE: 08/14/2020
STAFF: Iranna Konanahalli	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: FY2020 inspection of Metallurgical Processing, LLC ("Metallurgical")		
RESOLVED COMPLAINTS:		

Metallurgical Processing, LLC (B1814)
23075 Warner Ave.
(Former address: 2703 E. 9 Mile Road)
Warren, Michigan 48091-1919

Name change: Metallurgical Processing Company, Inc. (B1814) → Metallurgical Processing, LLC (B1814) (Aug 2015: along with permit application PTI No.: 147-14B)

702 BACT: Rule 336.1702 BACT for VOC (147-14B) and Rule 336.1225 Toxics (ITSL = 8-hour 50 µg per m³)

VN: As a result of FY 2014 complaint investigation, AQD did NOT issue Rule 336.1201 Violation Notice (VN) as Metallurgical was correctively prompt to apply for the required permit (PTI No. 147-14).

PTI No.: 147-14B dated August 27, 2015. This permit covers all heating treatin processes.

PTI Mods: PTI No. 133-79 (The permit required installation and operation of smog-hog, which used to catch fire) → PTI No. 147-14 (obtained as a result of FY 2014 complaint investigation) → PTI No.147-14A (change stack parameters) → PTI No. 147-14B. (add one additional heat-treating furnace)

PTI Voids (4): PTI Nos. 133-79 (10/31/2014) , 147-14 (06/11/2015), 147-14A (08/27/2015). AQD voided on November 09, 2016, PTI No. 596-87 based upon FY 2017 Scheduled Inspection and October 18, 2016, letter to Ms. Stephanie A. Jarrett (FTCH Project No. G130814; Ms. Stephanie A. Jarrett, PE; Phone: 248-324-2146; E-mail: saJarrett@ftch.com).

PTI Application Voids (3): PTI Application Nos. 82-77(05/06/1977), 515-78 (04/20/1979), 76-14 (09/17/2014)

FY 2019 Complaint – Throat and eye irritating contaminants.

1. C-19-00240-2018-10- 22 Referred by US EPA

On August 14, 2020, I conducted a level-2 **FY2020 inspection** of Metallurgical Processing, LLC (“Metallurgical”) located at 23075 Warner Ave., (Former address: 2703 E. 9 Mile Road), Warren, Michigan 48091-1919. The inspection was conducted to determine compliance with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA); Michigan Department of Environment, Great Lakes and Energy, Air Quality Division (MDEGLE-AQD) administrative rules; and PTI No. 147-14B.

Mr. Kevin L. Brown (Phone: 586-758-3100; Cell: 586-214-4983; Fax: 586-758-0375; E-mail: kevin@mpc-mi.com), Vice President, and Ms. Lew Wagerly (Phone: 586-758-3100; Cell: NA; Fax: 586-758-0375; E-mail: Lew@mpc-mi.com), Financial Controller, assisted me during the inspection.

Mr. Jeffrey M. Pyne (Phone: 586-758-3100; Cell: 586-214-4985; Fax: 586-758-0375; E-mail: jeff@mpc-mi.com), President, was not present.

Ms. Stephanie A. Jarrett (Phone: 248-324-2090; Direct: 248-324-2146; Cell: 248-417-9425; E-mail: saJarrett@ftch.com), PE, Sr. Environmental Engineer, of Fishbeck, Thompson, Carr & Hubber, and Ms. Anna M. Maiuri (Phone: 248-433-7200; Fax: 248-433-7274; E-mail: aMaiuri@dickinsonwright.com), Attorney, of Dickinson Wright, PLLC, are assisting Metallurgical with compliance issues and permits.

There are nine (9) hardening (primary) furnaces, each with integral quench oil. There are nineteen (19) tempering or draw (secondary) furnaces. Corresponding to 9 hardening furnaces, four (4) washers and four (4) oil skimmers are present. Mostly carburizing (carbon addition) work is done although some nitriding (nitrogen addition) is done. To add carbon to ferrous metal surface, three (3), atmospheric generators are present. A mixture of skimmed oil and wastewater is hauled away as waste. The skimmers allow reuse / recycle of water saving water costs. One 2,000-gallon anhydrous ammonia (NH₃) tank is present. Ammonia is directly used in hardening furnaces.

The PTI Mod (147-14A → 147-14B) added an additional heat-treating furnace with oil quench to the existing Surface B line, increased VOC emissions by 0.41 ton per year and increased quench oil usage by 116 gallons per year.

The furnaces are located in three separate buildings:

1. Becker building (idled for unforeseen time since August 2016)
2. Surface A building
3. Surface B building

Heat treating process:

Hardening (1100-1700 °F) → Quench Oil (160-240 °F – bacteria cannot survive) → Washer with Skimmer (160 °F – bacteria cannot survive) → Tempering (300-900 [average 350] °F)

Emission Unit ID	Emission Unit Description (Process Equipment & Control Devices)	Flexible Group ID
EUAMTANK1	A single anhydrous ammonia storage tank used to supply ammonia to metal heat treatment lines. The nominal tank storage capacity is up to 2,000 gallons.	NA
EU-SURFACEAHT	Surface A heat treating line consisting of 11 draw furnaces (one electric, 10 natural gas fired), four heat treating furnaces with integral oil quench, one atmosphere generator and two parts washers.	FGHEATTREAT
EU-SURFACEBHT	Surface B heat treating line consisting of three natural gas fired draw furnaces, three heat treating furnaces with integral oil quench, one atmosphere generator and one parts washer.	FGHEATTREAT
EU-BECKERHT	Becker heat treating line consisting of five natural gas fired draw furnaces, two heat treating furnaces with integral oil quench, one atmosphere generator and one parts washer.	FGHEATTREAT
FY 2019: Beckert furnace has been idle.		
Changes to the equipment described in this table are subject to the requirements of R 336.1201, except as allowed by R 336.1278 to R 336.1290.		

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FG-HEATTREAT	Three heat treating lines that consist of nine heat treatment hardening furnaces with integral quench tanks, four parts washers, 19 draw furnaces and three endothermic generators (atmosphere generators) for surface treatment of metal parts.	EUSURFACEAHT, EUSURFACEBHT, EUBECKERHT

PTI No. 147-14B, EU-AMTANK1 (2,000-gallon ammonia tank)

Emergency response plan is present. Shut-off valve is installed.

PTI No. 147-14B, FG-HeatTreat

Net quench oil usage:

1. CY 2015: 1,975 net gallons per year, although 14,105 gallons of quench oil per year is added, corresponding to 7.1 tons of VOC emissions per year.
1. CY 2016: 1,317 net gallons per year, although 9,410 gallons of quench oil per year is added, corresponding to 4.7 tons of VOC emissions per year.

1. CY 2017: 848 net gallons per year, although 6,060 gallons of quench oil per year is added, corresponding to 3.1 tons of VOC emissions per year.
2. CY 2018: 796 net gallons per year, although 6,530 gallons of quench oil per year is added, corresponding to 2.9 tons of VOC emissions per year
1. CY 2019: 597 net gallons per year, although 4,264 gallons of quench oil per year is added, corresponding to 2.1 tons of VOC emissions per 12-months rolling.

It may be noted that net quench oil usage has significantly declined: from 1,975 (CY 2015) to 597 (CY 2019) gallons in preceding five years.

About 86 percent of the oil added is reclaimed. The usage has drastically reduced as oil quench heat treatment business has reduced from 100 percent to 20 percent of total heat treating. It may be noted that if net quench oil usage limit is met, it is deemed that VOC emissions limit of 8.7 tons of VOC per year is satisfied.

(PTI No. 147-14B, FG-HeatTreat SC II.1 limit: 2,400 gallons per year) (PTI No. 147-14B, FG-HeatTreat SC I.1 limit: 8.7 tpy VOC).

PTI No. 147-14B, Appendix A (monthly quench oil balance and VOC emissions) calculations are performed and the records are kept PTI No. 147-14B, FG-HeatTreat SC.VI).

Only two types of quench oils are used (AAA and 420):

1. AAA: Paraffinic distillate oil (CAS # 64741-89-5 [70-90%] and CAS # 64742-54-7 [1-10%]; Flash Point (FP) = 340 °F; Specific Gravity (SG) = 0.86
1. 420: Paraffinic distillate oil (CAS # 64742-54-7 [70-90%]; Flash Point (FP) = 280 °F; Specific Gravity (SG) = 0.87

PTI Mods

As a result of complaints in 1970s and 1980s, two identical MS-20-1 SMOG-HOG heavy duty industrial electrostatic precipitators were installed (PTI Nos. 133-79 dated August 17, 1979, and 596-87 dated November 23, 1987). During the FY 2014 complaint investigation, it appeared that these precipitators were disconnected due to frequent fires in the past. As a result of the FY 2014 investigation and the negotiations, Metallurgical obtained PTI No. 147-14, which did away with the precipitators. During the FY 2017 scheduled inspection, I confirmed that the smog-hogs were physically removed. Metallurgical modified the permit (PTI No. 147-14 → PTI No. 147-14A) to change stack parameters. Such change still demonstrated compliance with Rule 225 (ITSL = 8-hour 50 µg per m³). About August 27, 2015, Metallurgical again modified the permit (PTI No. 147-14A → PTI No. 147-14B) to add

one furnace (8 + 1 = 9). As a result of the August 2015 modification, the limits increased (VOC by 0.41 tons per year and net quench oil usage by 116 gallons per year).

PTI No. 596-87 covered two parts washers, one continuous rotary furnace, one draw furnace and two parts quenchers with a Smog-Hog electrostatic precipitator. AQD voided PTI No. 596-87 as all process equipment including furnaces are now covered by PTI No. 147-14B.

Burner issues

On September 12, 2018 (~ 10:00 am) I observed up to 50% opacity from Hardening Furnace No. 4. High opacities were intermittent (not continuous) especially when the furnace (No. 4) started up due to burner tube firing problem. I talked to Messrs. Brown and Pyne. They stated that burner's sparking device was not functioning properly and, hence, resulting in rich-burn and incomplete combustion. On August 17, 2018, four new burners and two new recuperators (Eclipse, Inc. of Rockford, IL 61103-1299. Phone: 815-877-3031. Total ≈\$21,000.00. 8-10 weeks for delivery) had been ordered.

Great Lakes Industrial Services, Inc. (Sterling Hts., 586-323-9200) Invoice (Invoice No. 10736 dated October 15, 2018, \$3,104.40, Service Report No. 3467 dated October 05, 2018) for labor and material states that **Burner No. 4** was replaced. This burner replacement solved opacity issues due incomplete combustion and saved Metallurgical energy costs.

In addition, Great Lakes Industrial Services, Inc. (Sterling Hts., 586-323-9200) Invoice (Invoice No. 10757 dated October 30, 2018, \$4,039.00, Service Report No. 3474 dated October 25, 2018) for labor and material states that **Burner No. 5** was replaced. This burner replacement was proactive in nature. Eclipse, Inc. supplied burner components for Burner No. 5 repairs / replacement as well for \$6,190.00 (Invoice No. 1010386702 dated September 17, 2018)

No additional burner was replaced (Total 9 furnaces: #2 thru #10).

Conclusion

The burner issues were resolved via burner replacements. Metallurgical is in compliance with PTI No.: 147-14B that covers all heat-treating activities. The complaint is resolved. Proactively, Metallurgical also replaced / repaired HF#5 burner. In summary, HF#4 & HF#5 burners were replaced.

NAME *J. S. Marshall*

DATE December 4, 2020

SUPERVISOR *Joyce*