

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

N653768143

FACILITY: PROCAT TESTING LLC		SRN / ID: N6537
LOCATION: 30844 CENTURY DR, WIXOM		DISTRICT: Warren
CITY: WIXOM		COUNTY: OAKLAND
CONTACT: Phillip Moss ,		ACTIVITY DATE: 07/11/2023
STAFF: Adam Bognar	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: scheduled inspection		
RESOLVED COMPLAINTS:		

On Tuesday, July 11, 2023, Michigan Department of Environment, Great Lakes, and Energy-Air Quality Division (EGLE-AQD) employee Adam Bognar conducted a scheduled inspection of ProCat Testing (the “Facility” or “ProCat”) located at 30844 Century Drive, Wixom, Michigan 48393. The purpose of this inspection was to determine the facility’s compliance status with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control of Natural Resources and Environmental Protection Act, 1994 Public Act 451; Michigan Department of Environment, Great Lakes, and Energy, Air Quality Division (EGLE-AQD) rules; and Permit to Install No. 327-98H.

I requested records electronically from Phillip (Phil) Moss, Engineering & Facilities Manager on July 6, 2023. Phil provided me the requested records on July 11, 2023. I reviewed records from January 1, 2022 through July 1, 2023.

I arrived at the facility at around 10 am. I identified myself and stated the purpose of the inspection. I met with Phillip Moss, Engineering & Facilities Manager. We held a pre-inspection meeting we spoke about PTI No. 327-98H and reviewed some of the required records. After that meeting Phil showed me around the facility.

ProCat Testing, LLC, is involved in the designing, developing, validating, and certifying automotive emission catalysts for major automotive manufacturers. The business was established in 1997 as a joint venture between two automotive industry leaders: Prodrive, the advanced technology and motorsports company, and Engelhard Corporation, the global supplier of automotive catalyst technologies. There are 22 dynamometer test cells where engines/catalysts are tested. The facility is operated by around 20 employees 24 hours a day 5 days a week.

The automotive emission catalyst testing procedure is designed to rapidly age the catalyst material to simulate the entire life cycle of a vehicle. Inside the test cell, engines are hooked up to a catalytic converter. During testing, excess fuel is dumped into the engines periodically to create high temperature spikes in the catalyst material. After a period of unnaturally high fuel consumption the catalyst material becomes very hot. The catalyst is then allowed to cool and the cycle is repeated. The thermal stress resulting from cycling hot to cold temperatures of the catalyst rapidly ages and deteriorates the catalyst material. This test is designed to simulate the catalyst wear from driving an automobile 150,000 miles. It is cheaper to run this representative test than to actually test an engine catalytic converter for 150,000 miles.

While the engine/catalyst goes through this cycle, analyzers test the catalyst inlet and outlet concentrations of VOC, CO, CO₂, and NO_x. All of this data is logged into a computer system where destruction efficiencies can be calculated. In this way, several hundred catalysts are tested each

year at this facility. Automakers are required by the EPA to test their catalysts in this way. The catalysts are generally made up of Platinum, Rhodium, and Palladium.

FG-TESTCELLS

This flexible group consists of twenty-two (22) dynamometer engine test cells with catalytic converters burning unleaded gasoline, ethanol blends (up to 10%), and diesel fuel.

Section I – SC 1,2,3,4,5,6,7: These conditions establish annual emission limits for FG-TESTCELLS. Annual emissions are limited based on a 12-month rolling time period.

CO emissions are limited to 89.96 tons per year. CO emissions were reported highest during the 12-month rolling period ending in October 2022 at 8.82 tons. When calculating the monthly CO emissions, the facility applies a reduction efficiency based on a monthly average catalyst destruction efficiency.

NOx emissions are limited to 35.9 tons per year. NOx emissions were reported highest during the 12-month rolling period ending in September 2022 at 12.19 tons. When calculating the monthly NOx emissions, the facility applies a reduction efficiency based on a monthly average catalyst destruction efficiency.

PM2.5 emissions are limited to 9.95 tons per year. PM2.5 emissions were reported highest during the 12-month rolling period ending in October 2022 at 6.59 tons.

1,3-Butadiene emissions are limited to 0.18 tons per year. 1,3-Butadiene emissions were reported highest during the 12-month rolling period ending in October 2022 at 0.051 tons.

Acetaldehyde emissions are limited to 1.65 tons per year. Acetaldehyde emissions were reported highest during the 12-month rolling period ending in October 2022 at 0.03 tons.

Benzene emissions are limited to 0.4 tons per year. Benzene emissions were reported highest during the 12-month rolling period ending in October 2022 at 0.092 tons.

Formaldehyde emissions are limited to 0.41 tons per year. Formaldehyde emissions were reported highest during the 12-month rolling period ending in October 2022 at 0.1 tons.

Based on my review of the records submitted, Procat Testing is in compliance with the emission limits of PTI No. 327-98H. I verified that Procat Testing uses the emission factors specified in PTI No. 327-98H to calculate these emissions.

Section II – SC 1: States that the permittee shall only burn diesel, unleaded gasoline, and ethanol blends (up to 10%) for FG-TESTCELLS. Phil stated that these are the only types of fuels burned. These are the only types of fuels burned based on the records I reviewed.

Section II – SC 2: States that the total combined fuel usage for unleaded gasoline and ethanol blends for FG-TESTCELLS shall not exceed 454,000 gallons per 12-month rolling time period as determined at the end of each calendar month. ProCat Testing is in compliance with this emission limit based on the records I reviewed. Gasoline usage was reported highest during the 12-month period ending in October 2022 at 307,971 gallons.

Section II – SC 3: States that the diesel fuel usage for FG_TESTCELLS shall not exceed 75,000 gallons per 12-month rolling time period as determined at the end of each calendar month. ProCat Testing is in compliance with this emission limit based on the records I reviewed. Diesel fuel usage was reported highest during the 12-month period ending in May 2022 at 18,872 gallons.

Section II – SC 4: States that the total combined fuel usage for unleaded gasoline and ethanol blends shall not exceed 2,500 gallons per day. ProCat Testing is in compliance with this material usage limit based on the records I reviewed. The highest reported single day usage was 2,315 gallons on September 23, 2023.

Section II – SC 5: States that the diesel fuel usage for FG-TESTCELLS shall not exceed 720 gallons per day. ProCat Testing is in compliance with this material usage limit based on the records I reviewed. The highest reported single day usage was 253 gallons on March 17, 2023.

Section III – SC 1: State that the permittee shall not operate any engine in FG-TESTCELLS in wide-open throttle condition. Phil stated that the test cells are not run in wide-open throttle. Procat testing must keep daily records if any of the test cells are operated in a wide-open throttle condition.

Section IV – SC 1,2,3: States that the permittee shall equip and maintain each test cell with a catalytic converter. The catalytic converter must achieve a CO reduction of 90%, VOC reduction of 70%, and NOx reduction of 20%. According to Phil, each test cell contains a catalytic converter. I did not enter each test cell to verify this. I observed catalytic converters in a few of the test cells from the outside. Some of the test cells were operating so it was not possible to enter. I observed that there is gas analyzing equipment/lines hooked up to the catalytic converters which report to analytical equipment.

The nature of Procat Testing's business is testing catalytic converters, so it would not make sense to operate a test cell without one. ProCat Testing calculates these reduction efficiency values daily using an exhaust gas analyzer. These reduction efficiencies from all 22 test cells are aggregated and averaged together to obtain a daily average control efficiency. I reviewed all daily averages of reduction efficiency and found that they meet the permit requirements.

In 2023, from January 1 through July 1, average reduction efficiencies were 99.21% for CO, 87.85% for VOC, and 44.49% for NOx.

Section V – SC 1: States that the permittee shall verify the NOx emission rates from one emission unit in FG-TESTCELLS while burning diesel fuel. This test was conducted on October 29, 2020. The test showed a NOx emission rate of 0.0138 lb/gallon of diesel (controlled). Even when factoring in an approximately 50% reduction efficiency from the catalyst, the NOx emission factor determined during this test is lower than the uncontrolled NOx emission factor used in ProCat Testing's emission calculations (0.138 lb/gallon).

Section VI – SC 1,2: States that ProCat Testing must keep the following records:

Gallons of unleaded gasoline, ethanol blends, and diesel fuel used on a monthly and 12-month rolling basis. I verified that these records are maintained.

The permittee must keep records of NO_x, CO, PM_{2.5}, 1,3-Butadiene, acetaldehyde, benzene, and formaldehyde emissions on a monthly and 12-month rolling basis. I verified that these records are kept. Monthly emissions are recorded and added together to get the 12-month rolling totals.

Section VI – SC 3: States that ProCat Testing shall keep daily records of unleaded and diesel fuel usage. I verified that daily fuel usage records are kept.

Section VI – SC 4: States that ProCat Testing shall keep daily and monthly records of CO, VOC, and NO_x reduction efficiency records for each catalytic converter installed on FG-TESTCELLS. I verified that records of catalytic converter reduction efficiency were kept.

Section VI – SC 5: States that the permittee shall keep a daily record indicating if any engines in FG-TESTCELLS were operated in a wide-open throttle condition. Phil stated that none of the engines are run in a wide-open throttle condition. I did not see anything in the records I reviewed stating that test cells were run in a wide open throttle condition.

Section VII – States that the permittee shall notify the department if a change in land use occurs. No change in land use has occurred.

Section VII – Specifies stack dimension requirements. I did not verify stack dimensions during this inspection. Stacks appeared to be exhausted vertically unobstructed to the ambient air.

Fuel Storage Tanks

There is a three-compartment gasoline storage tank that, based on my observations, is exempt from Rule 201 pursuant to Rule 284(2)(g) since it handles less than 20,000 gallons of gasoline per day. There are two 6,000 gallon tanks and one 8,000 gallon tank.

The fuel storage tanks are not subject to the AQD Part 7 rules because the facility does not meet the AQD definitions of a "gasoline dispensing facility" or a "gasoline loading facility".

Based on my observations, the fuel storage tanks may be subject to 40 CFR Part 63, Subpart CCCCC - National Emission Standards for Hazardous Air Pollutants for Gasoline Dispensing Facilities; however, AQD has not taken enforcement delegation of these requirements.

Compliance Determination

ProCat Testing appears to be in compliance with 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); Michigan Department of Environment, Great Lakes, and Energy-Air Quality Division (EGLE-AQD) Administrative Rules; and Permit to Install No. 327-98H.

NAME Adam Bognar

DATE 7/20/2023

SUPERVISOR K. Kelly