

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

N636340027

FACILITY: CIE Newcor MTG		SRN / ID: N6363
LOCATION: 1021 N SHIAWASSEE, CORUNNA		DISTRICT: Lansing
CITY: CORUNNA		COUNTY: SHIAWASSEE
CONTACT: Jane Johnson , Operating Systems Coordinator		ACTIVITY DATE: 05/10/2017
STAFF: Julie Brunner	COMPLIANCE STATUS: Non Compliance	SOURCE CLASS: MINOR
SUBJECT: Facility Compliance Inspection		
RESOLVED COMPLAINTS:		

On May 10, 2017, I conducted a scheduled inspection of CIE Newcor MTG (N6363) in Corunna. The last inspection of the facility was on March 17, 2015.

**Facility Address:**

1021 N. Shiawassee, Corunna, Michigan 48817

**Facility Contact:**

Jane Johnson, Operating Systems Coordinator, 989-743-3936 ext. 262, [jjohnson@newcor.com](mailto:jjohnson@newcor.com)  
Robert Bowen, Team Facilitator, 989-743-3936 ext. 274, [rbowen@newcor.com](mailto:rbowen@newcor.com)

**Facility Description:**

CIE Newcor MTG (former Machine Tool & Gear Inc.) manufactures automotive drive train components (steel gears, pinions and axle assemblies). The facility includes induction furnaces and metal heat treating with oil quench to harden parts, and various metal machining processes. CIE Newcor MTG is located east of the Owosso Community Airport in a small industrial park. The facility was originally F and E Manufacturing Division – Tom McGuane Industries and was assigned the State Registration Number (SRN) of N0022. It has gone by the names Newcor Machine Tool & Gear, and Machine Tool & Gear (MTG). Somewhere along the way it was assigned another SRN of N6363. Since it had two SRNs, and the district files were under N6363. When MTG applied for a permit at their facility located at South Chestnut Street in Owosso, N0022 was re-assigned to it.

The area surrounding CIE Newcor MTG is mixed commercial/industrial to the west, and rural/residential to the east and southeast.

CIE Newcor MTG is a minor source for any regulated air contaminants including hazardous air pollutants (HAPs) and not subject to the Title V Renewable Operating Permit (ROP) program.

The facility has been in business for approximately 57 years.

Plant Capacity: Currently, they are expanding programs. Also, some programs are ending and some are starting up.

Staff #: 284      Shifts/Day: 3 shifts (8-hr)      Days of Operation/Week: 5 to 6 days/week

Boilers? No

Emergency Generators? No

**List of Active Air Use Permits:**

Permit to Install (PTI) **25-80** for a Detrex vapor degreaser with holding area booth.

PTI **48-80** for a Binks dry filter paint booth with an electric oven.

PTI **439-97A** for four (4) heat treatment furnaces that are now permitted on PTI 83-14. This permit did not get voided when PTI 83-14 was issued.

PTI **148-09** for EU-EVAPORATOR1 - Samsco waste water evaporator model number M606NAA (395,000 Btu/hr burner capacity). EU-EVAPORATOR1 is limited to emissions of volatile organic carbon (VOC) of 12 tpy on a 12-

month rolling time period as determined at the end of each calendar month (Rule 702(a)). Per Special condition (SC) III.3 wastewater processed by EU-EVAPORATOR1 shall not exceed a maximum of 285,000 gallons per year (Rule 224, Rule 225, Rule 702(a)).

PTI No. 83-14 for five (5) metal heat treatment lines identified as follows:

Emission Unit (EU) / Flexible Group (FG) ID	Description
EUFUR001	0.5 MMBtu/hr natural gas fired heat treat furnace with internal oil quench, one of two heated electric washers, one of two natural gas endothermic generators serving all furnaces to provide atmosphere and one of three 0.5 MMBtu/hr natural gas fired draw furnaces.
EUFUR002	0.5 MMBtu/hr natural gas fired heat treat furnace with internal oil quench, one of two heated electric washers, one of two natural gas endothermic generators serving all furnaces to provide atmosphere and one of three 0.5 MMBtu/hr natural gas fired draw furnaces.
EUFUR003	0.5 MMBtu/hr natural gas fired heat treat furnace with internal oil quench, one of two heated electric washers, one of two natural gas endothermic generators serving all furnaces to provide atmosphere and one of three 0.5 MMBtu/hr natural gas fired draw furnaces.
EUFUR004	0.5 MMBtu/hr natural gas fired heat treat furnace with internal oil quench, one of two heated electric washers, one of two natural gas endothermic generators serving all furnaces to provide atmosphere and one of three 0.5 MMBtu/hr natural gas fired draw furnaces.
EUFUR005	1.2 MMBtu/hr natural gas fired heat treat furnace with internal oil quench, one of two heated electric washers; one of two natural gas endothermic generators serving all furnaces to provide atmosphere and one of three 0.5 MMBtu/hr natural gas fired draw furnaces.
FGHEATTREAT	Five (5) heat treat hardening furnaces with internal quench tanks, parts washers and draw/tempering furnaces for surface treatment of metal parts. Each heat treat hardening furnace is equipped with a flame curtain.

Per SC I.1 emissions of VOC is limited to 9.7 tpy on a 12-month rolling time period as determined at the end of each calendar month (Rule 702(a)) for FGHEATTREAT and per SC II.1 the net quench oil usage shall not exceed 2,700 gallons per year on a 12-month rolling time period as determined at the end of the calendar month in FGHEATTREAT (Rule 225, Rule 702(a)). The net quench oil usage is defined as the amount of quench oil added to bring the quench oil levels up to starting levels less any amount of quench oil reclaimed, disposed of, or spilled/cleaned up.

**Applicable Regulations:**

No New Source Performance Standards (NSPS) and Maximum Achievable Technology Standards (MACT) have been identified as applicable to this source.

**Michigan Air Emissions Reporting System (MAERS):**

The facility is not currently required to report to MAERS. They have a permitted potential of greater than 10 tpy of VOC but actual emissions have historically been below 10 tpy of VOC facility-wide.

**Inspection:**

Arrived: 9:15 am

Departed: 1:40 pm

Weather: 53°F, SSE 7 MPH, UV Index 1 Low

When I arrived, I detected no odors around the facility. There were no visible emissions from any exhaust stack vents. I was met by Ms. Jane Johnson. A pre-inspection meeting was conducted and I discussed the purpose of my visit. Facility operations were discussed followed by a walk through of the facility.

The production areas are organized into cells according to the product line. I closely viewed the Dodge Ram Cell which included the following metal working processes:

1. Three (3) lathes (exempt per Rule 285(2)(l)(vi)(B))
2. Four (4) hot rolling turning machines (exempt per Rule 285(2)(l)(vi)(B))
3. Four (4) induction furnaces (exempt per Rule 290)

Miscellaneous Metal Machining Processes, Exemption Rule 285(2)(l)(vi)(B) –

There are a number of metal machining processes in the plant. There is cutting, machining, grinding, drilling and turning. These processes exhaust into the in-plant environment and appear to meet exemption Rule 285(2)(l)(i) and Rule 285(2)(l)(vi)(B).

Sixteen (16) Induction Hardening Furnaces, Exemption Rule 290 –

The metal pieces such as axles are machined, and then sent to the induction furnaces to harden the parts. The induction furnaces apply an electric current, and then quench the part using a nitrate free polymer and water solution spray/bath. Because the parts do have a coating of oil/rust inhibitor, exemption Rule 282(2)(a)(l) cannot be used. Black bag “collectors” have been added with external exhaust vents on some of the induction machines (~ 5) and this has helped reduce the haze in the plant that has been noted on previous inspections. Also, changing the materials used to quench in the furnaces has helped with odors and haze. This process change was discussed with AQD, and exemption Rule 290 is now used for the induction furnaces.

Each shift does a record for each induction furnace. There can be daily additions of the quench solution. The quench solution is changed out every 3 months. The Rule 290 record was developed in 2015 when the changes to the process were made. It was estimated that approximately 5220 gallons per year of AQUA QUENCH 365 could be used in the induction furnaces. Approximately 3,300 gallons of the POLYQUENCH 15-XNB were used in the induction furnaces in 2016.

Two (2) Electric Pit Furnaces, Exemption Rule 282(2)(a)(i) –

Two (2) electric pit furnaces numbered 5 and 6 bake metal pins to age the nickel coating. The pins are first carburized, and then sent out for an electroless nickel coating application. The pit furnaces heat the parts to 750°F in an atmosphere of nitrogen. These processes exhaust to the in-plant environment and appear to meet exemption Rule 282(2)(a)(i).

PTI No. 83-14 for five (5) metal heat treatment lines –

The facility has five (5) batch heat treatment operations that include carburizing and carbo-nitriding surface treatments to harden metal parts. For carburizing, the metal parts are heated in a thermal cycle that takes them up to temperatures of 1700°F. The atmosphere in the furnaces can include Endo gas (40% hydrogen, 20% carbon monoxide, and the balance is nitrogen) for surface treatment. The Endo gas is generated on-site from natural gas and injected into the furnaces. Flame curtains on the furnace keep the gas from escaping into the in-plant environment. The parts are then quenched in oil. The oil quenching is integral to the furnace design with the oil tank actually sitting under the furnace. The parts then go to one (1) of two (2) shared parts washers to remove the excess oil, and to one of three natural gas-fired draw furnaces.

For carbo-nitriding, ammonia is injected into the furnace at temperatures below 1600°F. Nitrogen from the ammonia diffuses in the metal surface. The ammonia disassociates in this process and emissions of ammonia are negligible from the operation. Ammonia is transported to and stored at the facility in 140 pound (~50 gallon) tanks. At any one time, there is at most four (4) ammonia tanks on-site. One (1) tank in use, two (2) spares and one (1) empty.

The furnaces are laid-out from north to south in the following order on the plant floor:

Emission Unit (EU)	Notes
EUFUR003	Holcroft heat treat furnace with integral batch quench (IBQ)
EUFUR002	Holcroft heat treat furnace with integral batch quench (IBQ)

<b>EUFUR001</b>	<b>Holcroft heat treat furnace with integral batch quench (IBQ)</b>
<b>EUFUR005(7)</b>	<b>Holcroft heat treat furnace with integral batch quench (IBQ), newest line which is actually no. 7 not 5 as identified on the PTL.</b>
<b>EUFUR004</b>	<b>Lindberg heat treat furnace with integral batch quench (IBQ)</b>

PTI No. 83-14 identifies the following stacks per SC VIII:

<b>Stack &amp; Vent ID</b>	<b>Diameter(in)</b>	<b>Height (feet)</b>
<b>1. SVFUR001</b>	<b>30</b>	<b>37</b>
<b>2. SVFUR002</b>	<b>36</b>	<b>37</b>
<b>3. SVFUR003</b>	<b>36</b>	<b>37</b>
<b>4. SVFUR004</b>	<b>24</b>	<b>37</b>
<b>5. SVFUR005</b>	<b>20</b>	<b>37</b>
<b>6. SVDRA007</b>	<b>36</b>	<b>37</b>
<b>7. SVDRA008</b>	<b>30</b>	<b>37</b>
<b>8. SVDRA009</b>	<b>30</b>	<b>37</b>
<b>9. SVDRA010</b>	<b>30</b>	<b>37</b>

There are actually only five (5) physical stacks. The vents for the heat treatment furnaces, draw furnaces, parts washers, and Engo gas generators are combined as follows:

<b>Stack &amp; Vent IDs</b>	<b>Diameter(in)</b>	<b>Height (feet)</b>
<b>SVFUR002, SVFUR003, SVDRA007, Parts Washer 1</b>	<b>36</b>	<b>37</b>
<b>SVFUR001, SVDRA008, Endo Gen 1</b>	<b>30</b>	<b>37</b>
<b>SVDRA008, SVDRA009</b>	<b>30</b>	<b>37</b>
<b>SVFUR005(7),* Endo Gen 2</b>	<b>20</b>	<b>37</b>
<b>SVFUR004, SVDRA010, Parts Washer 2</b>	<b>24</b>	<b>37</b>

\* This stack is located in the roof as opposed to the rest of the stacks which vent out the east wall and elbow vertical.

Facility was asked to confirm stack vents and a schematic is attached showing the equipment vents.

The permittee maintains Safety Data Sheets (SDS) of the materials used in the process. Oils used in the process are composed of petroleum distillates which are not HAPs. Trace emissions of HAPs could occur with the combustion of natural gas. Compliance with SC VI.2 was demonstrated with the SDS and also helps demonstrate that the facility is a true minor source of HAPs.

The recordkeeping uses mass balance calculations to determine VOC emissions. The amount of oil added to the quench tanks minus oil skimmed off the parts washers, spilled, and sent off for recycling is used to determine VOCs emitted. The records are required to be kept on a monthly basis. The records are kept in an Excel spreadsheet that shows the monthly quench oil balance and VOC emissions on a monthly and 12-month rolling basis. Compliance with SC VI.3 was demonstrated.

PTI **148-09** for a natural gas-fired waste water evaporator –

Oil/water from plant operations is dumped into a storage tank through filtered troughs that run along the side of the tank. Metal pieces and other solids are removed by the filters. The evaporator works on demand and heats the oil/water mixture to separate out the oils and evaporate the water. Approximately every four months, the waste water/oil sludge is removed from the facility by a waste hauler (about a 55 gallon drum). The waste water in the storage tank is sampled twice a year to confirm that the VOC content of the waste water is less than or equal to 1% VOC. An electronic system called GAGETRAK is used to track sampling and calibrations and works similar to a preventive maintenance system with work orders issued. The SDS of the oils that could end up in the system are kept as required by SC VI.2, and records are kept on a monthly basis of the gallons of wastewater processed and the VOC mass emissions in an acceptable format per SC VI.3.

Other Exempt Equipment:

Ammonia tanks – The 1,000 gallon ammonia tank has been removed. The pad where the 1,000 gallon tank used to sit is still there and right beside it is a fenced area for storage of the small ammonia tanks. The 140 pound (~50 gallon) ammonia tanks are exempt per Rule 284(2)(j).

Three (3) natural gas-fired tempering ovens – Three (3) walk-in ovens are used to heat parts for tempering. The tempering ovens appear to be exempt per Rule 282(2)(a)(i).

Liquid nitrogen tank – A 3,000 gallon liquid nitrogen tank is located outside in a fenced area on the north side of the plant. The tank was labeled and appears to meet exemption Rule 284(2)(j).

Cold cleaner/parts washer – Labels provided. Exemption Rule 281(2)(h).

Any painting of metal parts is sent out. No in-house painting now occurs at CIE Newcor MGT. The paint booth that was permitted on PTI 48-80 has been removed as it was part of another program. Also, the Detrex vapor degreaser was part of another program. For PTIs 25-80 and 48-80, the equipment was removed from the facility around 2005 and the permits need to be voided.

#### Records Review:

An electronic copy of some records was emailed, and paper copies are attached to this inspection report for the file.

A list of the following records obtained during the inspection are as follows:

1. FGHEATTREAT - VOC records from January 2014 to March 2017
2. SDS for machine oils that could be processed in EU-EVAPORATOR1
3. EU-EVAPORATOR1 – waste water sampling analysis (sample dates: 6/14/2016 and 12/19/2016)
4. EU-EVAPORATOR1 - VOC records for 2016, and January to March 2017
5. Induction furnace #007 record dated 5-8-17 (similar record is kept for each induction furnace).
6. SDS for POLYQUENCH 15-XNB and AQUA QUENCH 365 used in induction furnaces.
7. Purchase records for POLYQUENCH 15-XNB from 1/1/2016 to 5/10/17 showing 3,300 gallons purchased for 2016 and 660 gallons for the first 5 months in 2017.

#### FGHEATTREAT -

1. In the last 12-months (Apr-16 to March-17), the net quench oil usage rate was 1,478 gallons which is less than the 2,700 gallons allowed in SC II.1 of PTI 83-14.
2. In the last 12-months (Apr-16 to March-17), VOC emissions were 5.8 tpy which is less than the 9.7 tpy limit in SC I.1 of PTI 83-14.

#### EU-EVAPORATOR1 -

1. In the last 12-months (Apr-16 to March-17), 87,500 gallons of wastewater was processed in the evaporator which is less than the 285,000 gallons allowed in SC III.3 of PTI 148-09.
2. In the last 12-months (Apr-16 to March-17), VOC emissions were calculated as 3.65 tpy (assuming a VOC content of 1% by weight) which is less than the 12 tpy limit in SC I.1 of PTI 148-09.

Review of the waste water sampling on 6/14/2016 and 12/19/2016 doesn't demonstrate a VOC content of 1% by weight. The sampling analysis does not include the chemicals that are listed on the SDS for the machine oils. The sampling analysis does include a percent by weight of water. If the difference in the sample is assumed to be oil, then the VOC content is 33.6% (sampled 6/14/2016) and 24.2% (sampled 12/19/2016). If these VOC contents are used to calculate VOC emissions, then approximately 114 tons of VOC was emitted from Apr-16 to

March-17. (AQD calculations attached.) I think the test to determine the VOC content of the waste water does not measure the chemicals in the oils. A test to determine the oil (mainly petroleum distillates) content of the waste water is needed, similar to what was included in the application. A test to identify the VOCs in the coolants/metalworking fluids is also needed because it is not just petroleum distillates that are put into the evaporator. The sampling analysis does not appear to be using an acceptable method to determine VOC content. Compliance with SC V.1 of PTI 148-09 is an issue. Compliance with the 12 tpy VOC emission limit in SC I.1 of PTI 148-09 could also be an issue if the VOC content of the waste water is even greater than a couple of percent above 1.0% VOC.

Sixteen (16) Induction Hardening Furnaces, Exemption Rule 290 –

The Rule 290 record developed in 2015 is not being used, and records are not being kept properly to demonstrate compliance with Rule 290. Two materials can be used in the induction furnaces, AQUA QUENCH 365 and POLYQUENCH 15-XNB. AQUA QUENCH 365 has VOCs, and up to 1000 pounds per month of VOC emissions are allowed under Rule 290. Since there are 16 induction furnaces, the potential to emit is  $16 \times 1000$  pounds/month  $\times$  12 months/yr  $\times$  ton/2000 pounds = 96 tpy of VOCs.

For POLYQUENCH 15-XNB, the chemicals in the material appear to be solids and would be emitted as particulate. The induction furnaces do not appear to have a properly designed fabric filter or equivalent as required by Rule 290.

Also, not all the chemicals in the AQUA QUENCH 365 and POLYQUENCH 15-XNB have health-screening values. The appropriateness of using exemption Rule 290 for the induction furnaces needs to be re-evaluated.

**Summary:**

CIE Newcor MTG may have some compliance issues with applicable air quality rules and regulations, and PTIs. Follow-up on the sampling issues with PTI 148-09 is pending. Recordkeeping for Rule 290 needs to be fixed or another exemption rule selected, or an application for a PTI for the induction furnaces may be needed.

I requested that PTIs 25-80 and 48-80 (N0022) for F and E Manufacturing, and PTI 439-97A (N6363) for Newcor, Inc. be voided. For PTI 439-97A, this equipment was rolled into PTI 83-14 and for some reason was not voided. (And, yes this facility did have 2 SRNs which now has been fixed.) PTIs 25-80 and 48-80 were voided on May 18, 2017, and PTI 439-97A (N6363) was voided on May 23, 2017.

NAME Julie L. Burns DATE 6/6/17 SUPERVISOR B.M.