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

N059472217					
FACILITY: X-Cel Industries Inc.	SRN / ID: N6594				
LOCATION: 21121 Telegraph Rd, S	DISTRICT: Warren				
CITY: SOUTHFIELD	COUNTY: OAKLAND				
CONTACT: Ted Hundich , Environm	ACTIVITY DATE: 01/26/2024				
STAFF: Iranna Konanahalli	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT			
SUBJECT: FY 2024 Synthetic Minor (SM) scheduled inspection (on-site) of X-Cel Industries, Inc. ("X-Cel") located at 21121					
Telegraph Road, Southfield, Michiga	n 48033-4253.				
RESOLVED COMPLAINTS: C-19-0	1451				

X-Cel Industries, Inc. (N6594) Flex-N-Gate 21121 Telegraph Road Southfield, Michigan 48033-4253.

NAICS: 336300 Motor Vehicle Parts Manufacturing

Contacts:

NOF0470047

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- **3. Ted Hundich** (Phone: NA; Cell: 248-765-1094; <u>E-mail: tHundich@flexngate.com)</u>, Environmental Compliance
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Active permit: AQD issued Synthetic Minor (ROP and NESHAP / MACT MMMM (4M) & PPPP (4P) opt-out) PTI No. 260-98D (APP-2022-026, Rule 702 BACT is RTO control for all solvent-based coating booths except e-coat process) dated February 14, 2023, for an existing automotive metal (MACT 4M) / plastic (MACT 4P) parts manufacturing facility. X-Cel Industries ("X-Cel") previously operated under Synthetic Minor PTI No. 260-98C (coating operations: uncontrolled for VOC emissions). The current permit (PTI No. 260-98D) requires X-Cell to operate 6-spray booth coating line EU-COATINGLINE (including purge and clean-up) with a regenerative thermal oxidizer (RTO) (Rule 702 BACT for the coating

process) while operating water-based electrocoating deposition EU-ECOAT without RTO. Hence, VOC emissions from EU-ECOAT are uncontrolled and subject to Rule 610 RACT limit. Unlike the previous permit (PTI No. 260-98C), RTO is required in the current permit (PTI No. 260-98D) for solvent-based coatings because X-Cel decided to increase coating production. Source-wide FG-FACILITY stipulates source-wide limits (VOC < 90, Each Individual HAP < 9 & Aggregate HAPs < 22.5, all in tons per year) to opt-out of Titel V / ROP & NESHAP / MACT 4M & 4P. It must be noted that plastic parts are not coated anymore since June 2021, but plastic parts coating option is available per the permit if so desired. Satisfactory operation of the capture system and the RTO includes a minimum VOC capture efficiency of 90 percent (**CE > 90%w** by weight), a minimum VOC destruction efficiency of 95 percent (**DE > 95%w** by weight), a minimum retention time of 0.5 seconds and a minimum combustion temperature of 1,450°F. However, August 15, 2023, stack test (DE = 95%w ≥ 95%w) RTO temperature was **1,500°F**. No bypass of the RTO allowed for EU-COATINGLINE. Until further DE tests that prove DE > 95% wat lower RTO operating temperature (T), the minimum required RTO operating temperature has been reset to 1,500°F. Hundich stated that X-Cel has adjusted the RTO temperature setpoint to 1,500°F. The previous opt-out permit (Synthetic Minor PTI No. 260-98C) did not require a VOC control device such as RTO as a part of Rule 702 BACT.

In addition to the above VOC and HAPs limits, corresponding to the VOC limits, there are material limits in terms of gallons of coatings per year for various categories of coatings. Except E-coat process (< 0.6 lb VOC / gal-H₂O), which uses exclusively water-based coatings, all other coatings are solvent based since the VOC emissions are controlled by a recently (2023) installed RTO. Generally, it is NOT advisable to mix water-based and solvent-based coatings when an RTO control for VOC is involved due to water's quenching effect on combustion process.

VN: Based upon the FY 2024 inspection, EGLE-AQD issued **Violation Notice (VN)** dated January 31, 2024, for failure to monitor and record, in a satisfactory manner, the temperature in the combustion chamber of the RTO on a continuous basis during operation of EU-COATINGLINE RTO . Specifically, the weekly paper temperature charts were not promptly replaced resulting in having no proper temperature records. AQD received the **Violation Notice Response (VNR)** letter dated February 12, 2024. Mr. Hawkins (248-376-5137)_{FJZ11} stated that X-Cel would improve internal processes to ensure consistent and accurate monitoring and recording of RTO temperatures. The monitoring will have a dual redundancy such that both **paper chart** and **electronic data logger** would be used. Mr. Hundich stated, in March 2024, that work is in progress about software development for the RTO temperature logging. I emphasized that six (6) equally time-spaced temperature recordings in each operating hour are sufficient for the regulatory purposes.

Initial RTO performance test (2023): On August 15, 2023, **Grace Consulting, Inc**. ("GCI" or "Grace") of Wellington, OH 44090, performed stack sampling and testing (Job # 23-101; Test Date: 08-15-23; Report Date: 09-15-23; RTO Inlet and Outlet for VOC to determine destruction efficiency or DE) using US EPA Reference **Method 25A** (utilizing a **flame ionization analyzer**). Grace monitored Capture Efficiency (CE) by taking pressure drop (Δ P) readings at the filters of all six (6) air-tight enclosed paint booths. AQD approved the Test Pan for VOC Destruction Efficiency (DE) and Capture Efficiency (CE) Testing via letter dated August 09, 2023, from Andrew Riley of AQD-TPU. The concentrations of VOC, using US EPA Reference **Method 204**, CE was determined. All the locations passed the pressure drop criteria in Method 204 (Δ P > 0.007 inches of water) and, hence, the booths, tunnels,

and ovens from Booths 1-6 are completely enclosed (no NDOs), it can be concluded that the booth/oven system is achieving 100% capture efficiency (CE = 100%w > 90%w per PTI No. 260-98D, EU-COATINGLINE, IV.3: satisfactory operation of the capture system and the RTO includes a minimum VOC capture efficiency of 90 percent (by weight), a minimum VOC destruction efficiency of 95 percent (by weight), a minimum retention time of 0.5 seconds and a minimum combustion temperature of 1,450°F. Based upon three US EPA RM 25A runs of sampling, the destruction efficiency was determined to be 95 percent by mass (Run1 = 93, Run2 = 95 & Run3 = 96, percent destruction by mass). It must be noted that during the August 2023 DE testing RTO operating temperature was 1,500°F. Hence, until repeat testing for DE showing $DE \ge 95\%w$, RTO operating temperature is reset or upgraded to 1,500°F from 1,450°F (RTO test for DE at 1,500°F > PTI required at 1,450°F).

In conclusion, Destruction Efficiency (DE) is 95%w at 1,500°F and Capture Efficiency (CE) is 100% based upon the August 15, 2023, tests.

Malfunction Abatement Plan (MAP): X-Cel submitted MAP dated March 01, 2023, to produce front and rear automotive bumper assemblies involving predominantly solventborne coating operations. E-coat process, as in all most all e-coat processes, uses exclusively water-based coatings. VOC emissions are controlled by regenerative thermal oxidizer (RTO) to destroy via combustion volatile organic compounds (VOCs) and hazardous air pollutants (HAPs). Routine inspection and maintenance tasks are included in the facility's Preventative Maintenance (PM) program. In general, maintenance assignments are provided to the appropriate personnel on a daily, weekly, or as needed basis for completion using Maximo software. X-Cel maintains an inventory of replacement parts. RTO is equipped with electronic interlock controls that monitor the combustion chamber temperature.

On January 26, 2024, I conducted a level-2 FY 2024 Synthetic Minor (SM) scheduled inspection (on-site) of X-Cel Industries, Inc. ("X-Cel") located at 21121 Telegraph Road, Southfield, Michigan 48033-4253. This source is uniquely identified by the Air Quality Division with the State Registration Number (SRN) of N6594. 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; and Michigan Department of Environment Great Lakes and Energy, Air Quality Division (EGLE-AQD) administrative rules; and the conditions of Permit to Install (PTI) No. 260-98D.

X-Cel Industries, Inc. (X-Cel) currently (2024) specializes in surface coating metal parts for the automotive industry. PTI No. 260-98D authorizes solvent-based EU-COATINGLINE, which is a plastic and metal parts coating line with an RTO control for VOC. Water-based E -coat line (EU-ECOAT) operates without RTO. X-Cel ceased coating plastic parts in December 2021. No internal plan has been announced to resume surface coating of plastic parts. PTI No. 260-98D allows plastic parts coating.

On April 01, 2021, X-Cel was purchased by Flex-N-Gate, a major global auto supplier. On November 1, 2021, Flex-N-Gate also purchased the adjacent building to the north, located at 21175 Telegraph Road. This building was formerly occupied by COMAU Robotics. The new 21175 building will be used only for assembly, shipping, and receiving. Founded in 1956, Flex-N-Gate is a multinational auto supplier with over 20,000 employees, 70 automotive parts production plants and 6 R&D Centers, 9 billion dollars in sales.

The coating steps: E-coat 4 Primer (surfacer) 4 BC (solvent) 4 CC (solvent). The areas of possible VOC emissions are paint booths and curing ovens. The paint/coating booths are completely enclosed with no noticeable air gaps and the paint/coatings are applied robotically so that the doors to these booths always remain closed (with negative pressure w.r.t. the surroundings) during the coating operation. All booths and ovens vent to the RTO for VOC destruction via combustion with heat recovery (~95%). The curing oven line is also completely enclosed with no noticeable air gaps and all VOC vent to the RTO. The only opening is at the end of the curing line when the product comes out when paint is dry. The paint / coating overspray particulates are controlled by a down-draft multi-layer dry filter system. The dry filter control device in each spray booth consists of a grid of **pocket** filters, covered with grates, and then covered by **blanket** filters (inexpensive sacrificial filters). The blanket filters are changed daily. The pocket filters are changed once per week or as needed. I inspected each downdraft spray booth while operating and after shutdown.

Emission Unit ID	Emission Unit Description	Installation Date / Modification Date	Flexible Group ID		
EU-ECOAT	A metal parts coating line consisting of electrocoating deposition (E-coat) with fourteen dip tanks (13 wash dip tanks and a e-coat tank) and a curing oven. Clean-up included.	06-09-1999 / 05-23-2003 / 01-08-2007 / 10-31-2014			
1-2 spray clean with city water with alkaline cleaner. 3: immersion alkaline cleaner, 4: city water spray rinse. 5: conditioner. 6: prepares surface zinc phosphate. 7: city water rinse. 8: sealer. 9: RO water dip. 10: RO spray rinse. 11: e-coat. 12: e-coat. RO permeate spray. 13. Permeate immersion. Concentrate back to e-coat.					
Exclusively water-	based e-coat coatings are used.				
EU-COATINGLINE	A plastic / metal parts coating line consisting of six (6) spray booths and two (2) natural gas fired curing ovens (consisting of 4 curing zones) controlled by a regenerative thermal oxidizer (RTO). Purge and clean-up included	06-09-1999 / 05-23-2003 / 01-08-2007 / 10-31-2014 /			
BC 4 flash off area 4 CC 4 flash off . Primer Surfacer / BC / CC OVENS (2: one for primer surfacer and one for BC/CC)					
A regenerative thermal oxidizer (RTO) for VOC emissions control. Dry filter systems (primary blanket filters (inexpensive sacrificial filters) and secondary pocket filters.). Turner EnviroLogic makes the RTO which was installed in March 2023. X-Cel relocated the RTO from another Flex-N-Gate facility to Southfield. Two ceramic packing chambers are used for heat recovery. The chambers are switched based upon temperature (about 30 seconds). Heat recovery efficiency is over 90%. The RTO is equipped with a circular chart to record combustion temperature that need to be replaced once per week.					
Prior to March 2023, X-Cel operated the coating booths without RTO control. After RTO installation, X-Cel has been operating the booths with RTO control for destruction of VOC to principally water and carbon dioxide in accordance with the revised permit. The RY 2023 MiEnviro Emissions Report reflects this unique spilt situation of March 2023. BC 4 flash off area 4 CC 4 flash off . Primer Surfacer & BC / CC OVENS (2: one for primer surfacer and one for BC/CC).					
Two sets of filers: primary (blanket) filters are changed every 8-hour shift, and secondary (pocket / pleated) filters are changed every week (every Friday) or as necessary based upon visual inspection. All exhaust gases (all six booths) flow is downdraft through the filter systems.					

PTI No. 260-98D, Emission Units (EUs)

Manometers are present for pressure differential (ΔP) but not used for filter replacement purposes.

All (except e-coat), paint/coatings are applied robotically so the doors to these booths always remain closed (with negative pressure w.r.t. the surroundings) with no chance for fugitive VOC escape to the surroundings. i.e., all VOC make it to the RTO for eventual destruction.

PTI No. 260-98D, Compliance

PTI No. 260-98D, EU-ECOAT

EU-ECOAT: A metal parts coating line consisting of electrocoating deposition (E-coat) with fourteen dip tanks (13 wash dip tanks and one e-coat tank) and a curing oven. Clean-up included. Only water-based coatings are used.

PTI No. 260-98D, EU-ECOAT, I.1

CY 2023: Annual (Dec 2023) water-based E-coat VOC emissions are 3.9 tons per 12month rolling period (PTI No. 260-98D, EU-ECOAT, I.1 limit: 20.5 tpy VOC)

PTI No. 260-98D, EU-ECOAT, III-V

All waste coatings, reducers, solvents, and thinners (materials), VOC and/or HAP containing materials are handled properly and stored in closed containers. EU-ECOAT process is equipped with a dip tank.

PTI No. 260-98D, EU-ECOAT, VI

The required records are kept. VOC emissions calculations are performed.

The e-coat VOC emissions (mostly water from water-based coatings) are discharged via stack SV-ECOAT (ECOAT Oven). No VOC control by RTO.

PTI No. 260-98D, EU-COATINGLINE

EU-COATINGLINE: A plastic / metal parts coating line consisting of six (6) spray booths and a common two (2) natural gas fired curing ovens (consisting of 4 curing zones) controlled by a regenerative thermal oxidizer (RTO). Purge and clean-up included.

Primer surfacer: one oven with one curing zone BC / CC: one oven with 3 curing zones.

BC 4 flash off area 4 CC 4 flash off. Primer Surfacer / BC / CC OVENS (2 ovens: one for primer surfacer and one for BC/CC)

Double layered dry filter systems for paint overspray particulate matter. A regenerative thermal oxidizer (RTO, Turner EnviroLogic) for VOC control from solvent-based coating spray booths (6). RTO consists of two ceramic packing chambers (one in combustion phase and simultaneously the other is in heat recovery phase). The chambers are switched based upon temperature T (about 30 seconds between each switch).

PTI No. 260-98D, EU-COATINGLINE, I.1

CY 2023: Annual solvent-based EU-COATINGLINE VOC emissions are 7.4 (highest for Dec 2023) tons per 12-month rolling period (PTI No. 260-98D, EU-COATINGLINE, I.1 limit: 57.1 tpy VOC).

PTI No. 260-98D, EU-COATINGLINE, III.1-4

X-Cel captures all waste coatings, reducers, purge and cleanup solvents, and thinners (materials) & VOC and/or HAP containing materials and stores them in closed containers. Spent filters (dry) are disposed of as solid waste. As stated above, X-Cel has submitted and implemented a malfunction abatement plan (MAP).

PTI No. 260-98D, EU-COATINGLINE, IV.1-4

Each booth (that is enclosed in an air-tight manner) is equipped with two-layer filter system. Primary (blanket) filters are changed every shift, and secondary (pocket) filters are changed every week (Friday). All exhaust gases (all six booths) flow is downdraft through the filter systems. A communal RTO is installed and operating properly. <u>FJZ31</u> As stated above, AQD issued a January 31, 2024,VN for failure to install a chart for temperature recording purposes. Based upon August 2023 DE tests, RTO operating temperature is reset or upgraded to **1,500°F** from 1,450°F.

PTI No. 260-98D, EU-COATINGLINE, V.1-3

As stated above, in August 2023, X-Cel performed stack tests for destruction efficiency (DE) and capture efficiency (CE).

PTI No. 260-98D, EU-COATINGLINE, VI.1-3

X-Cel is keeping monthly coating usage records and performing the required calculations. X -Cel shall monitor and record, in a satisfactory manner, the temperature in the combustion chamber of the RTO using circular paper charts. As a result of some missing temperature record charts when the charts were not changed, AQD issued VN (see above). X-Cel agreed to install an electronic data acquisition system.

PTI No. 260-98D, EU-COATINGLINE, VIII.1

Products of combustion gases from the RTO are discharged via SV-RTO (RTO Stack)

PTI No. 260-98D, FG-FACILITY

PTI No. 260-98D, FG-FACILITY, I.1-5 (CY2023)

Pollutant	Limit tpy	Time Period / Operating Scenario	Equipment	CY2023 tpy
1. VOC	< 90.0	12-month rolling	FG-FACILITY	11.3
2. Each Individual HAP	< 9.0	period as determined at the	FG-FACILITY	<0.1
3. Aggregate HAPs	< 22.5	calendar month	FG-FACILITY	0.6
	0.15	-	FG-FACILITY	

	4. cumene			0.031
	(CAS No. 98-82-8)			
0.	ethylbenzene (CAS	0.7	FG-FACILITY	0.088
	No. 100-41-4)			

PTI No. 260-98D, FG-FACILITY, II.1-3 (CY2023)

Material	Annual Usage Limit gallons (with water) per year	Equipment	CY2023 gallons (with water) per year	
1. Group 1 Coatings	205,000	EU-ECOAT portion of FG-FACILITY	39,882	
2. Group 2 Coatings	7,560	Cleaning/Polishing Operations of FG-FACILITY	124	
3. Group 3 Coatings	189,566	Mixing/Blending Operations of FG-FACILITY	26,438	
Time Period / Operating Scenario: 12-month rolling period as determined at the end of each calendar month				
EU-ECOAT: Water-based e-coat process FG-FACILITY: EU-ECOAT & EU-COATINGLINE (six (6) spray booths a communal two (2) natural gas fired curing ovens (consisting of 4 curing zones))				

PTI No. 260-98D, FG-FACILITY, VI

The coatings usage records (gallons of Group 1-3 Coatings) and content (VOC, individual HAP) are kept. all required calculations are performed (gallons per 12-month, VOC, HAPs, cumene (CAS No. 98-82-8), ethylbenzene (CAS No. 100-41-4), etc.).

Conclusion

EGLE-AQD issued **Violation Notice (VN)** for failure to monitor and record RTO temperature (T). Except RTO temperature monitoring, X-Cel is in compliance with the permit (PTI No. 260-98D). Repeat inspection is necessary.

NAME Sliknanahall.

DATE 06-13-2024

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