

MEMO

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THRU Daniel C. Husted, P.E. *DCH*
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DATE June 22, 2023

RE Ward Manufacturing, LLC
Title V Operating Permit No. 59-00004
Blossburg Borough, Tioga County

Procedural History

As part of the Reasonably Available Control Technology (RACT) regulations codified at 25 Pa. Code §§ 129.111—129.115 (relating to additional RACT requirements for major sources of NO_x and VOCs for the 2015 ozone NAAQS) (RACT III), the Pennsylvania Department of Environmental Protection (Department) has established a method under § 129.114(i) (relating to alternative RACT proposal and petition for alternative compliance schedule) for an applicant to demonstrate that the alternative RACT compliance requirements incorporated under § 129.99 (relating to alternative RACT proposal and petition for alternative compliance schedule) (RACT II) for a source that commenced operation on or before October 24, 2016, and which remain in force in the applicable operating permit continue to be RACT under RACT III as long as no modifications or changes were made to the source after October 24, 2016. The date of October 24, 2016, is the date specified in § 129.99(i)(1) by which written RACT proposals to address the 1997 and 2008 8-hour ozone National Ambient Air Quality Standards (NAAQS) were due to the Department or the appropriate approved local air pollution control agency from the owner or operator of an air contamination source located at a major NO_x emitting facility or a major VOC emitting facility subject to § 129.96(a) or (b) (relating to applicability).

The procedures to demonstrate that RACT II is RACT III are specified in § 129.114(i)(1)(i), 129.114(i)(1)(ii) and 129.114(i)(2), that is, subsection (i), paragraphs (1) and (2). An applicant may submit an analysis, certified by the responsible official, that the RACT II permit requirements remain RACT for RACT III by following the procedures established under subsection (i), paragraphs (1) and (2).

Paragraph (1) establishes cost effectiveness thresholds of \$7,500 per ton of NO_x emissions reduced and \$12,000 per ton of VOC emissions reduced as “screening level values” to determine the amount of analysis and due diligence that the applicant shall perform if there is no new pollutant specific air cleaning device, air pollution control technology or technique available at the time of submittal of the analysis. Paragraph (1) has two subparagraphs.

Subparagraph (i) under paragraph (1) specifies that the applicant that evaluates and determines that there is no new pollutant specific air cleaning device, air pollution control technology or technique available at the time of submittal of the analysis and that each technically feasible air cleaning device, air pollution control technology or technique evaluated for the alternative RACT requirement or RACT emission limitation approved by the Department (or appropriate approved local air pollution control agency) under § 129.99(e) had a cost effectiveness equal to or greater than \$7,500 per ton of NO_x emissions reduced or \$12,000 per ton of VOC emissions reduced shall include the following information in the analysis:

- A statement that explains how the owner or operator determined that there is no new pollutant specific air cleaning device, air pollution control technology or technique available.
- A list of the technically feasible air cleaning devices, air pollution control technologies or techniques previously evaluated under RACT II.
- A summary of the economic feasibility analysis performed for each technically feasible air cleaning device, air pollution control technology or technique in the previous bullet and the cost effectiveness of each technically feasible air cleaning device, air pollution control technology or technique as submitted previously under RACT II.
- A statement that an evaluation of each economic feasibility analysis summarized in the previous bullet demonstrates that the cost effectiveness remains equal to or greater than \$7,500 per ton of NO_x emissions reduced or \$12,000 per ton of VOC emissions reduced.

Subparagraph (ii) under paragraph (1) specifies that the applicant that evaluates and determines that there is no new pollutant specific air cleaning device, air pollution control technology or technique available at the time of submittal of the analysis and that each technically feasible air cleaning device, air pollution control technology or technique evaluated for the alternative RACT requirement or RACT emission limitation approved by the Department (or appropriate approved local air pollution control agency) under § 129.99(e) had a cost effectiveness less than \$7,500 per ton of NO_x emissions reduced or \$12,000 per ton of VOC emissions reduced shall include the following information in the analysis:

- A statement that explains how the owner or operator determined that there is no new pollutant specific air cleaning device, air pollution control technology or technique available.
- A list of the technically feasible air cleaning devices, air pollution control technologies or techniques previously evaluated under RACT II.
- A summary of the economic feasibility analysis performed for each technically feasible air cleaning device, air pollution control technology or technique in the previous bullet and the cost effectiveness of each technically feasible air cleaning device, air pollution control technology or technique as submitted previously under RACT II.
- A statement that an evaluation of each economic feasibility analysis summarized in the previous bullet demonstrates that the cost effectiveness remains less than \$7,500 per ton of NO_x emissions reduced or \$12,000 per ton of VOC emissions reduced.

- A new economic feasibility analysis for each technically feasible air cleaning device, air pollution control technology or technique.

Paragraph (2) establishes the procedures that the applicant that evaluates and determines that there is a new or upgraded pollutant specific air cleaning device, air pollution control technology or technique available at the time of submittal of the analysis shall follow.

- Perform a technical feasibility analysis and an economic feasibility analysis in accordance with § 129.92(b) (relating to RACT proposal requirements).
- Submit that analysis to the Department (or appropriate approved local air pollution control agency) for review and approval.

The applicant shall also provide additional information requested by the Department (or appropriate approved local air pollution control agency) that may be necessary for the evaluation of the analysis submitted under § 129.114(i).

Facility details

Ward Manufacturing, LLC' s (Ward's) facility, which includes Plants 1, 2 and 3, is an iron foundry that uses a cupola to melt scrap iron to make new cast parts for various industries. The facility is major for VOCs. EPA approved this facility's RACT II plan on January 10, 2017 (85 FR 65718, October 16, 2020).

The sources subject to a RACT II as RACT III analysis at this facility include:

- Source ID 101/183: Cupola/Scrap & Charge Handling Area;
- Source ID 149: Core Room Operations;
- Source IDs 173/199: Molding & Casting Operations/Molding Lines

No modifications or changes were made to these sources after October 24, 2016.

Ward submitted its RACT II as RACT III proposal on November 29, 2022.

Source ID	Source Name	RACT III provision
101/183	Cupola/Scrap & Charge Handling Area	§129.114(i)(1)(i)
149	Core Room Operations	§129.114(i)(1)(i)
173/199	Molding & Casting Operations/Molding Lines	§129.114(i)(1)(i)

The RACT II determination/requirements can be found in the attached RACT II review memo and at the following link:

[EPA Approved Pennsylvania Source-Specific Requirements | US EPA](#)

RACT III analysis performed by the Department (or appropriate approved local air pollution control agency) under § 129.114(j)(1):

As a preface to all the analyses discussed below, All4, consultant for Ward who prepared Ward's RACT III plan, discussed newer control technologies, generally, with CECO Environmental. Pertaining to the sources below, the only other control option would be to include a VOC concentrator to aid in the oxidation of the VOC emissions.

For Source ID 101/183: Cupola/Scrap & Charge Handling Area, the cupola has the following existing RACT 2 conditions:

- o Comply with the 20 ppmv VOHAPs emission restriction;
- o Do not process more than 37.78 tons per hour and 226,680 tons per 12-consecutive month period of malleable and gray iron;
- o Control VOC emissions through the Maxon afterburners;
- o Maintain the Maxon afterburners outlet temperature at $\geq 1,300^{\circ}\text{F}$.

Additionally, for Source ID 183 (scrap handling), the scrap fed to the cupola must be evaluated as per the company's scrap handling plan. This plan requires Ward to accept certified "clean" scrap, i.e., metal containing no free organic liquids, or, if not certified, to inspect the scrap for contamination in accordance with 40 CFR 63, Subpart EEEEE, §63.7700(c)(1)-(3) and segregate any scrap that contains oily residues or plastics, i.e., sources of extraneous VOCs. Although this plan is identified as a RACT requirement for Source ID 183, in reality it is a requirement for the cupola, as the scrap handling operation, in and of itself, does not emit any VOCs. The VOC emissions, as a result of combusting organic contaminants, occur in the cupola.

With respect to the use of a VOC concentrator as noted above, such an add-on would not be technically feasible due to the concentrator's sensitivity to inlet temperatures over 110°F .

Because Ward already controls emissions at both the source (scrap handling procedures) and at the stack (afterburners), there is little more the company can do to reduce VOC emissions from this operation. This was the conclusion reached for RACT 2 and, given the evidence presented in the plan, is still the case for RACT 3.

Source ID 149: Core Room Operations, has existing RACT 2 conditions as follows:

- o Combined VOC emission limit of 72.66 tons per 12-consecutive month period;
- o Natural gas or propane firing only;
- o The use of Binder WB950 or equivalent, as approved by the Department.

Based on the RACT 2 evaluation, Ward's recent review of the RBLC and ALL4's discussion with an air pollution control device vendor, the most cost-effective add-on control for core operations is a thermal oxidizer; however, Ward found that the costs are extremely high not only for the oxidizer itself but also for the extensive ductwork and ventilation system required to vent all sources under the Source ID to the oxidizer. For RACT 2, accounting for these upfront costs, natural gas fuel and evaluating these costs in accordance with EPA's OAQPS Cost Manual, Ward calculated an annual cost well in excess of the RACT 2 benchmark, thus no add-on controls were feasible (see table below). Noteworthy too, is that this cost

is also well above the \$12,000/ton of VOCs removed RACT 3 benchmark. The same conclusion can be drawn for the addition of a VOC concentrator. Because the costs would be even higher, no economic analysis was performed. I concur with this approach.

With respect to control at the source, the binders used in the core production are the source of the VOCs. Ward already uses a low VOC binder and continually investigates the use of lower VOC containing binders when they become available. As such, nothing more can be done at the source.

For Source ID's 173/199: Molding & Casting Operations/Molding Lines, these Source ID's are, respectively, the molding/casting operations and the associated molding lines (SPO1 and SPO3). Collectively, these sources have combined RACT 2 VOC limits of: 55.3 lbs/hr and 109.5 TPY. The limits were established this way because the molding and casting operations support the molding lines. Additionally, the molding and casting operations do have some trivial, fugitive loss of VOCs; however, the overwhelming majority of the VOC emissions occur from the molding lines themselves. RACT 2, specifically for the molding lines, is to follow the mold vent ignition requirements specified under 40 CFR §63.7710, to which the lines are subject.

Based on the RACT 2 evaluation, Ward's recent review of the RBLC and ALL4's discussion with an air pollution control device vendor, Ward evaluated the use of a thermal oxidizer in addition to the existing mold vent igniters. Like the economic feasibility analysis conducted for Source ID 149, Ward found the same extremely high costs associated with controlling the VOC emissions from the SPO lines. A final cost for a thermal oxidizer was well in excess of the RACT 2 benchmark, thus no add-on controls were feasible (see table below). Noteworthy too, is that this cost is also well above the \$12,000/ton of VOCs removed RACT 3 benchmark. The same conclusion can be drawn for the addition of a VOC concentrator. Because the costs would be even higher, no economic analysis was performed. I concur with this approach. Also worthy of note is that the exhaust temperatures from the SPO lines would be excessive for the use of a VOC concentrator.

Because I reviewed Ward's RACT 2 evaluations for the above sources, I can verify all information provided by Ward as noted above. Based on this previous evaluation and Ward's recent review of the RBLC, I concur with Ward's conclusions.

Source ID	Source Name	Control Technology	VOC Emissions Before Control	VOC Emissions After Control	Total Annual Cost of Control Equipment	VOC (\$/Ton)
101/183	Cupola/Scrap & Charge Handling Area	n.a.	n.a.	n.a.	n.a.	n.a.
149	Core Room Operations	Thermal oxidizer	72.66	0.73	\$2,840,710	\$39,493/Ton
173/199	Molding & Casting Operations/Molding Lines	Thermal oxidizer	109.5	0.1	\$11,495,827	\$105,090/Ton

The evaluations of each economic feasibility analysis summarized in the Table above demonstrates that the cost effectiveness for each source remains equal to or greater than \$12,000 per ton of VOC emissions reduced.

The Department has reviewed source information, control technologies or measures evaluated by Ward. The Department also performed an independent analysis which included, the Department's continuous review of permit applications since the applicability date of RACT II, internet searches, BACT/RACT/LAER Clearinghouse search, knowledge gained from the Department permitting staff participating in technical presentations by several vendors and manufacturers of pollution control technology, and a review of EPA and MARAMA's documents. Based on our review of these documents, along with training and the expertise of the reviewing staff, the Department concludes that there are no new or updated air pollution control technologies available for the sources found at Ward and determines that RACT II requirements for Source ID's 101/183, 149, and 173/199 at Ward listed in the table assure compliance with requirement for RACT III for the § 129.111 - § 129.115.

Public Discussion

No discussions occurred with the EPA, Ward, or the public after Ward submitted the RACT II is RACT III proposal application.

Conclusion

The Department has analyzed Ward's proposal for considering RACT II requirements as RACT III and also performed independent analysis. Based on the information provided by Ward and independently verified by the Department, the Department determines that the RACT II requirements satisfy the RACT III requirements. The RACT III requirements are identical to the RACT II requirements and are as stringent as RACT II.

cc: NCRO, 59-00004