

TO Mark J. Wejkszner, P.E. MJW 8/9/2023
Air Quality Program Manager

FROM Mark Mott MM 06/26/2023
Permit Application Manager

THRU Norm Frederick, P.E. NF 08/9/2023
Chief, Facilities Permitting Section

DATE June 26, 2023

RE Silberline Manufacturing Co., Inc., Lincoln Drive Plant
Title V Operating Permit No. 54-00041
Rush Township, Schuylkill

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

Silberline Manufacturing Co., Inc. (Silberline) owns and operates the Lincoln Drive aluminum pigment manufacturing facility (Lincoln Drive Facility) in Rush Township, Schuylkill County, Pennsylvania. The Lincoln Drive Facility is currently permitted under Title V Operating Permit #54-00041, issued on March 20, 2019 and revised March 16, 2020. The facility is a major VOC emitting facility and minor NOX emitting facility as defined in Title 25 of the Pennsylvania Code, Chapter 121.1 (25 Pa Code 121.1).

There have been no modifications or changes to the RACT Sources after October 24, 2016.

EPA approved RACT II as stated in the Federal Register and approval and promulgated in Rule by EPA on 01/25/2022, with Document Citation 87 FR 3437.

“Silberline Manufacturing Company Lincoln Drive Plant- Incorporating by reference Permit No. 54-00041, effective **March 16, 2020, as redacted by Pennsylvania. All permit conditions in the prior RACT Permit No. 54-0041, effective April 19, 1999, remain as RACT requirements. See also [§ 52.2063\(c\)\(143\)\(i\)\(B\)\(44\)](#), for prior RACT approval.”**

RACT II is RACT III application was submitted to the Region on December 28, 2022.

- List of sources(s) subject to § 129.114(i) - RACT II determination assures compliance with RACT III requirements

Source ID	Source Name	RACT III provision*
101	MILLING/SCREENING	§129.114(d)
102	FILTER PRESSES	§129.114(d)

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 (NERO) under §129.114(j)(1):

Silberline has determined that there are no new air cleaning devices, air pollution control technologies or techniques available to control VOC emissions from Source ID's 101 and 102.

The Department confirmed this through the following means:

1. I reviewed the RACT/Best Available Control Technology (BACT)/Lowest Achievable Emissions Rate (LAER) Clearinghouse (RBLC). It was determined that no new air cleaning devices, air pollution control technologies, or techniques could be applied to these sources.
2. A series of online google searches for new control technologies for carbon adsorption units was performed. Consistent with Silberline's assessment, the following analysis was evaluated:

Potentially Available VOC Control Technologies for Aluminum Pigment Processes

Potentially Applicable VOC Control Technologies
 Carbon Adsorption
 Regenerative Thermal Oxidizer (RTO)
 Recuperative Oxidizer
 Catalytic Oxidizer
 Good Operating Practices

VOC Control Efficiencies for Technically Feasible Controls

<u>Technology</u>	<u>VOC Control Efficiency</u>
Regenerative Thermal Oxidizer (RTO)	98%
Recuperative Oxidizer	95%
Catalytic Oxidizer	95%
Carbon Adsorption	95%
Good Operating Practices	N/A

Cost Effectiveness for Technically Feasible Controls

<u>Technology</u>	<u>Cost Effectiveness</u> <u>(\$/ton VOC)</u>
Carbon Adsorption	Installed
Regenerative Thermal Oxidizer (RTO)	\$12,781.99
Recuperative Oxidizer	\$32,638.66
Catalytic Oxidize	\$20,655.03
Good Operating Practices	N/A

Based on the results of these analyses, RTO, recuperative oxidizer, and catalytic oxidizer, are not considered economically feasible as RACT for Source IDs 101 and 102. The \$1,500 carbon adsorption system (Source ID C01) at the facility does not have an incurred cost due to the technology already being installed and implemented. As such, this control is considered feasible as RACT. As good operating practices is considered technically feasible, does not have an identifiable cost, and is already implemented by the facility, it is considered feasible as RACT.

Based on this analysis, Carbon Adsorption and Good Operating Practices is RACT. All other control technologies assessed were of equal control effectiveness and not considered economically feasible. As a carbon adsorption system is currently installed and used to control VOCs at the facility and as good operating practices are already implemented, Silberline will continue to utilize these controls to minimize VOC from Source IDs 101 and 102. Silberline will also continue to follow all emission limitation, testing, monitoring, recordkeeping, reporting, and work practice requirements present in the current Title V Operating Permit

Based on the control technology review, the Department concludes that no new control technologies or sufficient changes to the technical capabilities of the existing technologies were identified.

Source ID	Source Name	Control Technology	VOC Emissions Before Control	VOC Emissions After Control	Total Annual Cost of Control Equipment	VOC (\$/Ton)
101	MILLING/SCREENING					N.A. – not technically feasible
102	FILTER PRESSES					N.A. – not technically feasible

Those technologies identified for RACT III are the same as RACT II being:

Source ID 101: Milling/Screening

Source ID 101 is aluminum pigment milling and screening process at the facility which is controlled by a carbon adsorption unit. Make and model are not applicable to this source. This source was modified in early 2011 to also include a Mini System per Plan Approval No. 54-399-045. This source does not have any presumptive RACT III VOC limits and has a potential to emit of greater than 2.7 tpy VOC. As such, Silberline submitted an alternative RACT III compliance (Case-by-Case) proposal as specified in 25 Pa Code §129.114(d).

Source ID 102: Filter Presses

Source ID 102 is aluminum pigment filter press processes at the facility which is controlled by a carbon adsorption unit. Make and model are not applicable to this source. This source was modified in early 2011 to also include a Mini System per Plan Approval No. 54-399-045. This source does not have any presumptive RACT III VOC limits and has a potential to emit of greater than 2.7 tpy VOC. As such, Silberline submitted an alternative RACT III compliance (Case-by-Case) proposal as specified in 25 Pa Code §129.114(d).

VOC RACT Assessment for Source ID 101 and 102

Source IDs 101 and 102 are aluminum pigment milling, screening, and filter press processes at the Lincoln Drive facility. Ball mills are used to reduce the aluminum into a small, uniform particle size in a

slurry form with D40 Solvent for viscosity. The slurry is transferred to vibratory screens that separate all large particles from the slurry. That slurry is then pumped to a filter press which separates the D40 from the filter-cake. The cake is then made into the final product for customers. These mills, screens, and presses are in large production departments that are the majority of this facility's plant are:

As stated previously, there are no presumptive VOC limits in RACT III for aluminum pigment milling, screening, and filter press processes. In addition, VOC emissions from each of these sources exceeds 2.7 tpy. In February 2020, Silberline submitted a Case-by-Case analysis for these sources. From this analysis, the following RACT was determined for the sources:

- 1) Each source shall be inspected, operated, and maintained as pre manufacturer's specifications and good air pollution control practices.
- 2) All mixer covers remain closed, except when production, sampling, maintenance, or inspection procedures require access.
- 3) The permittee shall follow the visual leak and inspection maintenance plan which shall include, at minimum, the following:
 - a. An inspection schedule;
 - b. Method for documenting the date and results of each inspection and any repairs that were made; and
 - c. The time frame between identifying a leak and making the repair, which shall adhere to the following:
 - i. A first attempt at repairs, including tightening of packing glands, shall be made no later than five (5) working days after the leak is detected.
 - ii. Final repair shall be made withing fifteen (15) days, unless the leaking equipment is to be replaced by a new purchase, in which case repairs shall be completed within (3) months.

These were added to the current Title V operating permit following the modification submitted with this Case-by-Case analysis. These are found in Section E, Group 2. These sources cannot submit case-by-case RACT proposals under the streamlined requirements in 25 Pa §Code 129.114(i) because the units had cost effectiveness for VOC controls less than \$12,000 per ton when submitting this Case-by-Case RACT proposal for RACT II under 25 Pa Code §129.99(d). As such, Silberline is submitting a Case-by-Case analysis to comply with the requirements of 25 Pa Code §129.114(d)

Step 1: Identify All Control Technologies for VOC

Based on reviews of the U.S. Environmental Protection Agency's (EPA's) RACT/BACT/LAER Clearinghouse (RBLC) database and knowledge of the industry, the various technologies that were identified as being theoretically applicable to Source IDs 101 and 102 are as follows:

Potentially Available VOC Control Technologies for Aluminum Pigment Processes

Carbon Adsorption
Regenerative Thermal Oxidizer (RTO)
Recuperative Oxidizer
Catalytic Oxidizer
Good Operating Practices

- Carbon adsorption involves the use of activated carbon and its adsorption properties in order to remove VOCs from exhaust streams. A carbon adsorption system (Source ID C01) is already installed and used to control VOC from Source IDs 101 and 102 at the Lincoln Drive facility.
- Regenerative Thermal Oxidizer (RTO) use combustion at high temperatures in order to destroy VOCs in exhaust air.
- Recuperative Oxidizers work using the same principle of high combustion temperatures to destroy VOCs. Where the technology differs in in the heat recovery process.
- Catalytic Oxidizers used a catalyst to promote the oxidation of VOCs in exhaust streams. These operate at lower temperatures than thermal oxidizers.
- Good Operating Practices means instituting standards, practices, methods, and procedures that result in the minimization of VOC emissions to air.

Step 2: Eliminate Technically Infeasible Options for VOC Control

All technologies identified in Step 1 were determined to be technically feasible to control Source IDs 101 and 102 at the Lincoln Drive facility.

Step 3: Rank Remaining Control Technologies by Control Effectiveness

Typical control efficiencies for the remaining control technologies are as follows:

- Regenerative Thermal Oxidizer (RTO) 98%
- Recuperative Oxidizer 95%
- Catalytic Oxidizer 95%
- Carbon Adsorption 95%
- Good Operating Practices N/A

Step 4: Evaluate Most Effective Controls and Document Results

Silberline has performed a cost effectiveness analysis for the controls identified. The cost effectiveness was determined to be approximately as follows:

<u>Technology</u>	<u>Cost Effectiveness</u> (\$/ton VOC)
Carbon Adsorption	Installed
Regenerative Thermal Oxidizer (RTO)	\$12,781.99
Recuperative Oxidizer	\$32,638.66
Catalytic Oxidizer	\$20,655.03
Good Operating Practices	N/A

Based on the results of these analyses, RTO, recuperative oxidizer, and catalytic oxidizer, are not considered economically feasible as RACT for Source IDs 101 and 102. The \$1,500 carbon adsorption system (Source ID C01) at the facility does not have an incurred cost due to the technology already being installed and implemented. As such, this control is considered feasible as RACT. As good operating

practices is considered technically feasible, does not have an identifiable cost, and is already implemented by the facility, it is considered feasible as RACT.

Step 5: Select RACT

Based on this analysis, Silberline identified Carbon Adsorption and Good Operating Practices as RACT. All other control technologies assessed were of equal control effectiveness and not considered economically feasible. As a carbon adsorption system is currently installed and used to control VOCs at the facility and as good operating practices are already implemented, Silberline will continue to utilize these controls to minimize VOC from Source IDs 101 and 102. Silberline will also continue to follow all emission limitation, testing, monitoring, recordkeeping, reporting, and work practice requirements present in the current Title V Operating Permit.

RACT PROPOSAL SUMMARY

Based on the analysis provided by NERO and assisted by Silberline, the Lincoln Drive facility proposed RACT and related monitoring, testing, recordkeeping and reporting are summarized below. Carbon Adsorption and Good Operating Practices were identified as RACT for Source IDs 101 and 102. As these controls are already installed and implemented at the facility, Silberline is proposing to continue to comply with the current Title V Operating Permit conditions related to these sources and controls.

Emission Source ID(s) Milling/Screening, Filter Press, and Mini System; Title V Source IDs 101 and 102

Source Description(s):

- ▶ Source ID 101: Milling/Screening
 - Aluminum pigment milling and screening
 - Controlled by:
 - ◆ Carbon Adsorption
- ▶ Source ID 102: Filter Press
 - Aluminum pigment filter press
 - Controlled by:
 - ◆ Carbon Adsorption

Description of RACT:

- Case-by-case
- ▶ No additional controls were determined to be technically or economically feasible. Lincoln Drive is proposing to continue to implement the carbon adsorption system and comply with good operating practices per Section E, Group 2 and Group 3, of the current Title V Operating Permit.
 - ▶ Silberline will comply with the proposed case-by-case RACT effective January 1, 2023.

Proposed Emission Limitation:

- ▶ Per Section E, Group 2, Condition #001 of the current permit: The VOC emissions from the Mini System shall not exceed 7.8 TPY based on a 12-month rolling sum.
- ▶ Per Section E, Group 3, Condition #001 of the current permit: Outlet VOC concentration from the carbon adsorber shall be less than or equal to 20 ppm as propane.

Proposed Monitoring:

▶ Per Section E, Group 2, Condition #002 of the current permit: The permittee shall maintain a visual leak inspection and maintenance plan which shall include, at minimum, the following:

- An inspection schedule,
- Methods for documenting the date and results of each inspection and any repairs that were made, and
- The time frame between identifying a leak and making the repair, which shall adhere to the following:

- ◆ A first attempt at repairs, including tightening of packing glands, shall be made no later than five (5) working days after the leak is detected.

- ◆ Final repairs shall be made within fifteen (15) working days, unless the leaking equipment is to be replaced by a new purchase, in which case repairs shall be completed within three (3) months.

▶ Per Section E, Group 3, Condition #002 of the current permit: The VOC concentration in the outlet gas shall be monitored continuously.

Proposed Testing:

▶ N/A

Proposed Recordkeeping:

▶ Per Section E, Group 2, Condition #003 of the current permit: The permittee shall maintain records in accordance with Site Level Condition #013. The data recorded shall include but not be limited to:

- The monthly throughput of mineral spirits,
- The calculations of estimated VOC emissions in tons.

▶ Per Section E, Group 3, Condition #003 of the current permit: The permittee shall maintain records of the quarterly gas analyzer calibration.

Proposed Reporting:

▶ Per Section E, Group 2, Condition #004 of the current permit: The permittee shall, on quarterly basis, compile a report for submission to the Department of the hours of operation and the VOCs emission data in accordance to Site Level Condition #013. This report shall include, but not be limited to the following data concerning the previous quarter:

- The monthly mass balance of VOC emissions.

Proposed Work Practice Requirements:

▶ Per Section E, Group 2, Condition #006 of the current permit: The permittee shall operate Source ID 101 and 102 in accordance with the following work practice requirements:

- Each source shall be inspected, operated and maintained as per manufacturers specification and good air pollution control practices.
- All mixer covers remain closed, except when production, sampling, maintenance, or inspection procedures require access.
- The permittee shall maintain a visual leak inspection and maintenance plan which shall include, at minimum, the following:

- ◆ An inspection schedule,

- ◆ Methods for documenting the date and results of each inspection and any repairs that were made, and

◆ The time frame between identifying a leak and making the repair, which shall adhere to the following:

- ♣ A first attempt at repairs, including tightening of packing glands, shall be made no later than five (5) working days after the leak is detected.
- ♣ Final repairs shall be made within fifteen (15) working days, unless the leaking equipment is to be replaced by a new purchase, in which case repairs shall be completed within three (3) months.

▶ Per Section E, Group 3, Condition #004 of the current permit: A spare gas analyzer for the carbon adsorber shall be kept on site.

▶ Per Section E, Group 3, Condition #005 of the current permit: The operational gas analyzer shall be calibrated at least once per calendar quarter.

Public discussion

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

Conclusion

The Department (NERO) has analyzed the applicant's (Silberline Manufacturing, TV 54-00041) proposal for considering RACT II requirements as RACT III and also performed independent analysis. Based on the information provided by the applicant or owner/operator of the facility and independently verified by the Department (NERO), the Department (NERO) 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: NERO, PERMIT NUMBER TV 54-00041
EPA DISTRICT 3

ATTACHMENT: RACT II REVIEW MEMORANDUM.