

December 22, 2022

VIA ELECTRONIC MAIL

Mr. James Rebarchak
Southeast Regional Air Quality Program Manager
Pennsylvania Department of Environmental Protection
Southeast Regional Office
2 E. Main Street
Norristown, PA 19041-4915

**Re: NOTIFICATION OF RACT III APPLICABILITY
TITLE V OPERATING PERMIT NO. 46-00198
BLOMMER CHOCOLATE COMPANY
EAST GREENVILLE, PENNSYLVANIA FACILITY**

Dear Mr. Rebarchak:

On behalf of Blommer Chocolate Company (Blommer), ALL4 LLC (ALL4) is providing this summary of Reasonably Available Control Technology (RACT) applicability for the Blommer East Greenville, Pennsylvania facility (Facility). This submission is in accordance with the recently promulgated provisions of 25 Pa. Code §§129.111-129.115 (RACT III). This document is the required notification of applicability in accordance with 25 Pa. Code §129.115(a). In addition, this document includes the analysis of alternative RACT compliance required under 25 Pa. Code §129.114(i) for sources at the Facility that were subject to previous case-by-case RACT determinations that were previously approved by the Pennsylvania Department of Environmental Protection (PADEP) under 25 Pa. Code §129.99(e).

Facility Background and RACT III Rule Applicability

Blommer is a manufacturer of wholesale ingredient chocolate and cocoa products. Blommer produces chocolate and related chocolate products (chocolate chips for cookies, chocolate coating for cakes, etc.) for purchase by consumer chocolate manufacturers or for other food products manufacturers that utilize chocolate products. Blommer also produces and sells other chocolate manufacturing end products such as cocoa powder, cocoa butter, and chocolate liquor. The Facility operates under PADEP Title V Operating Permit (TVOP) No. 46-00198.

The RACT III Rule applies to major nitrogen oxides (NO_x) and/or major volatile organic compounds (VOC) emitting facilities. 25 Pa. Code §121.1 defines major NO_x and VOC emitting facilities as follows:

- Major NO_x emitting facility – a facility-wide potential to emit (PTE) greater than 100 tons per year (TPY).
- Major VOC emitting facility – a facility-wide PTE greater than 50 TPY.

The Facility is a major VOC emitting facility under 25 Pa. Code §121.1 and is subject to the VOC provisions of RACT III in accordance with 25 Pa. Code §129.111(a). This notification is being made in accordance with the requirements of the RACT III Rule for the Facility's VOC emitting sources. The

Facility is not a major NO_x emitting Facility under 25 Pa. Code §121.1 and has therefore not included NO_x emitting sources as part of this notification.

Notification of Applicability and Compliance Proposal [25 Pa. Code §129.115(a)]

The following subsections provide the notification of applicability and compliance proposal required under 25 Pa. Code §129.115(a).

25 Pa. Code §129.115(a)(1) – Submission Deadline

Because the Facility was a major VOC emitting facility prior to August 3, 2018, this submittal is being made on or before December 31, 2022, in accordance with 25 Pa. Code §129.115(a)(1)(i).

25 Pa. Code §129.115(a)(2) – Identification of Air Contamination Sources That Commenced Operation on or Before August 3, 2018

Table A-1 of Attachment A provides the RACT III Rule Applicability Summary, which identifies the following:

- Air contamination sources exempted from 25 Pa. Code §§129.112-129.114 because they are already subject to certain Chapter 129 RACT requirements [i.e., §§129.51, 129.52(a)-(k) and Table I categories 1-11, 129.52a-129.52e, 129.54-129.63a, 129.64-129.69, 129.71-129.75, 129.77, and 129.101-129.107].
- Air contamination sources subject to a presumptive RACT requirement or RACT emissions limitation in 25 Pa. Code §129.112.
- Air contamination sources subject to an alternative RACT requirement or RACT emissions limitation under 25 Pa. Code §129.114.

25 Pa. Code §129.115(a)(3) – Identification of Air Contamination Sources That Commenced Operation After August 3, 2018

Because the Facility was considered a major VOC emitting facility prior to August 3, 2018, 25 Pa. Code §129.111(b) does not apply.

25 Pa. Code §129.115(a)(4) – Identification of Air Contamination Sources That Emit Less Than One TPY

Table A-1 of Attachment A identifies the Facility’s air contamination sources that are exempt from the RACT III Rule on the basis that they have a PTE less than one TPY of VOC.

25 Pa. Code §129.115(a)(5) – Air Contamination Source Information (Commenced Operation on or Before August 3, 2018)

Table A-1 of Attachment A provides a Source Inventory that contains a description, including make, model, and location (as available) of each air contamination source subject to the RACT III Rule. The applicable RACT requirement or RACT emissions limitation for each source is also provided in Table A-1 of Attachment A.

25 Pa. Code §129.115(a)(6) – Air Contamination Source Information (Commenced Operation After August 3, 2018)

Because the Facility was considered a major VOC emitting facility prior to August 3, 2018, 25 Pa. Code §129.115(a)(6) does not apply.

25 Pa. Code §129.115(a)(7) – Air Contamination Source Information (That Emit Less Than One TPY)

Table A-1 of Attachment A provides a Source Inventory that contains a description, including make, model, and location (as available) of each air contamination subject to the RACT III Rule. Table A-2 includes information sufficient to demonstrate that the listed sources have a PTE less than one TPY of VOC, as applicable.

25 Pa. Code §129.114(a) – Alternative RACT Requirement or Emission Limitation

Blommer has no identified sources which require a case-by-case RACT determination or proposed RACT for control of VOC emissions. Therefore, Blommer does not intend to submit to PADEP an Alternative RACT and Compliance Proposal to present case-by-case RACT determinations to be performed and proposed alternative RACT requirements in accordance with proposed 25 Pa. Code §129.114(d).

25 Pa. Code §129.114(i) – Analysis of Alternative RACT Compliance

Sources that cannot meet a presumptive RACT requirement or emissions limitation or exceed potential emissions thresholds (not subject to a presumptive requirement) may propose an alternative RACT compliance if certain criteria have been met. There are specific sources identified as air contamination sources that require case-by-case RACT determinations and proposed RACT for control of VOC emissions because they do not fall into a presumptive RACT category included in 25 Pa. Code §129.112. In accordance with 25 Pa. Code §129.114(i), an alternative RACT proposal, as required per 25 Pa. Code §129.114(d), is not necessary if the air contamination source in question was in operation prior to October 24, 2016, has not been modified or changed since October 24, 2016, and does not fall into one of the presumptive source categories subject to 25 Pa. Code §129.112(c)(11) or §129.112(i)-(k). For sources meeting the stated criteria, this letter serves as a demonstration that Blommer can maintain compliance with the alternative RACT requirements and/or emissions limitations previously approved under 25 Pa. Code §129.99(e) as RACT by PADEP.

These sources include:

- 105: Line 2 Roaster
- 108: Line 2 Grinder
- 109: Line 1 Roaster
- 118A: Line 3 Grinder
- 124A: Alkalization Processes
- 125: Line 3 Roaster

- 132A: Line 1 Grinder
- 143: Line 4 Micronizer
- 147: Line 4 Cooler

The following subsections provide the analysis of alternative RACT compliance in accordance with 25 Pa. Code §129.114(i)(1)(i).

25 Pa. Code §129.114(i)(1)(i)(A) – Identification of New Air Cleaning Devices, Air Pollution Control Technologies, or Techniques

Blommer reviewed entries in the RACT/Best Available Control Technology (BACT)/Lowest Achievable Emissions Rate (LAER) Clearinghouse (RBLC) to determine if any new technologies were applicable to the units onsite. No new technically feasible technologies were discovered and the work practices for the affected units are consistent with recent and historical RBLC determinations.

25 Pa. Code §129.114(i)(1)(i)(B) – List Previously-Identified Technically Feasible Controls

The previously identified technically feasible controls that were included in Blommer’s 25 Pa. Code §129.99(d) RACT submittal, previously approved by PADEP, were as follows for Source IDs 105, 108, 109, 118A, 124A, 125, 132A, 143, and 147:

- Thermal Oxidation
- Good Operating Practices

Blommer also considered wet electrostatic precipitation and biofiltration but ultimately deemed these to be inefficient for the control of VOC and were therefore considered to be technically infeasible options.

25 Pa. Code §129.114(i)(1)(i)(C) – Summary of Previous Economic Feasibility Analyses

Blommer considered the control technologies of the above-mentioned options and obtained updated cost quotes from a thermal oxidation control device vendor to reflect current prices in accordance with 25 Pa. Code §129.114(i)(1)(ii)(E). A summary of the results from the updated control cost analyses is provided in Table 1. The updated control cost analyses for thermal oxidation for each source listed in Table 1 are included in Attachment B.

**Table 1
Summary of Technically Feasible Control Options Considered for Economic Feasibility**

Source ID and Name		Technically Feasible Control Options	Economic Feasibility Cost Analysis Result (\$ Amounts Represent \$/ton of VOC Reduced)
Line 2 Roaster	105	• Thermal Oxidation	Economically Infeasible - \$18,953
		• Good Operating Practices	Already In Use
Line 2 Grinder	108	• Thermal Oxidation	Economically Infeasible - \$46,184
		• Good Operating Practices	Already In Use
Line 1 Roaster	109	• Thermal Oxidation	Economically Infeasible - \$93,414
		• Good Operating Practices	Already In Use
Line 3 Grinder	118A	• Thermal Oxidation	Economically Infeasible - \$28,480
		• Good Operating Practices	Already In Use

Source ID and Name		Technically Feasible Control Options	Economic Feasibility Cost Analysis Result (\$ Amounts Represent \$/ton of VOC Reduced)
Alkalization Processes	124A	• Thermal Oxidation	Economically Infeasible - \$16,578
		• Good Operating Practices	Already In Use
Line 3 Roaster	125	• Thermal Oxidation	Economically Infeasible - \$12,741
		• Good Operating Practices	Already In Use
Line 1 Grinder	132A	• Thermal Oxidation	Economically Infeasible - \$35,443
		• Good Operating Practices	Already In Use
Line 4 Micronizer	143	• Thermal Oxidation	Economically Infeasible - \$90,397
		• Good Operating Practices	Already In Use
Line 4 Cooler	147	• Thermal Oxidation	Economically Infeasible - \$40,653
		• Good Operating Practices	Already In Use

25 Pa. Code §129.114(i)(1)(i)(D) – Statement of Economic Infeasibility

The summary of each economic feasibility analysis summarized above in Table 1 demonstrates that the cost effectiveness remains greater than \$12,000 per ton of VOC emissions reduced after considering updated control cost analyses.

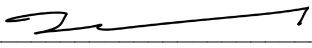
25 Pa. Code §129.114(i)(1)(i)(E) – Additional Information

Upon request from PADEP, Blommer will provide additional information to support the Alternative RACT Compliance Analysis included herein.

Certification of Alternative RACT Compliance Analysis

I certify under penalty of law that, based on information and belief formed after reasonable inquiry, the statements and information contained in this 25 Pa. Code §129.114(i) Alternative RACT Compliance Analysis are true, accurate, and complete. Furthermore, the Alternative RACT Compliance Analysis previously approved by PADEP under 25 Pa. Code §129.99(e) (relating to alternative RACT proposal and petition for alternative compliance schedule) assures compliance with the applicable provisions of 25 Pa. Code §129.114.

Mark Slusser- Operations Manager
Responsible Official Name


Signature

RACT III Rule Compliance and Recordkeeping

In accordance with 25 Pa. Code §129.115(f), Blommer will keep sufficient records to demonstrate compliance with the RACT III Rule, including continued compliance with the RACT-specific recordkeeping conditions of the TVOP. Per 25 Pa. Code §129.115(k), all records will be maintained for at least five years, and will be made available to PADEP upon receipt of a written request.

Please contact me at pmallon@all4inc.com if you have any additional questions.

Sincerely,
ALL4 LLC



Paul Mallon
Managing Consultant

cc: Aaron Prizer, EHS Manager (Blommer)
Mark Slusser, Operations Manager (Blommer)
Tom Saylor, Consulting Engineer (ALL4)

Enclosures

**ATTACHMENT A –
SUPPORTING RACT III SUMMARY TABLES**

Table A-1
Blommer Chocolate Company - East Greenville, PA
Summary of RACT III Implications for Existing VOC Emissions Units

Source Description	PADEP Source ID	Fuel	Make	Model	Location	Source Capacity/ Throughput	TVOP No. 46-00198 Emissions Limits	RACT III Classification	RACT III Citation	RACT III Requirement(s)	Comments
Combustion Sources											
Hurst Boiler No. 1	033	Natural Gas	Hurst	S5-300-200-G	Roasting Building	12.55 MMBtu/hr	N/A	Combustion unit < 20 MMBtu/hr	25 Pa. Code §129.112(c)(4)	Presumptive - Install, maintain, and operate in accordance with manufacturer specifications and good operating practices.	N/A
Hurst Boiler No. 2	034	Natural Gas	Hurst	S5-300-200-G	Roasting Building	12.55 MMBtu/hr	N/A	Combustion unit < 20 MMBtu/hr	25 Pa. Code §129.112(c)(4)	Presumptive - Install, maintain, and operate in accordance with manufacturer specifications and good operating practices.	N/A
Line 2 Roaster Burner	106	Natural Gas	G.W. Barth	3500 RS	Roasting Building	3.18 MMBtu/hr	0.09 tons/yr, 12-month rolling basis	VOC air contamination source with PTE <1 ton/yr VOC	25 Pa. Code §129.111(c)	Exempt	N/A
Line 1 Roaster	109	Natural Gas	Wolverine	SR3-202	Roasting Building	4.00 MMBtu/hr	N/A	Combustion unit < 20 MMBtu/hr	25 Pa. Code §129.112(c)(4)	Presumptive - Install, maintain, and operate in accordance with manufacturer specifications and good operating practices.	N/A
Line 3 Roaster	125	Natural Gas	Proctor & Swartz	K14803	Roasting Building	5.00 MMBtu/hr	21.31 tons/yr, 12-month rolling basis	Combustion unit < 20 MMBtu/hr	25 Pa. Code §129.112(c)(4)	Presumptive - Install, maintain, and operate in accordance with manufacturer specifications and good operating practices.	N/A
Line 2/3 Micronizer & Bucket Elevator	131A	Natural Gas	G.W. Barth	IR6000	Roasting Building	2.44 MMBtu/hr	2.60 tons/yr, 12-month rolling basis	Combustion unit < 20 MMBtu/hr	25 Pa. Code §129.112(c)(4)	Presumptive - Install, maintain, and operate in accordance with manufacturer specifications and good operating practices.	N/A
Line 4 Micronizer	143	Natural Gas	G.W. Barth	IR8000	Roasting Building	4.30 MMBtu/hr	3.29 tons/yr, 12-month rolling basis	Combustion unit < 20 MMBtu/hr	25 Pa. Code §129.112(c)(4)	Presumptive - Install, maintain, and operate in accordance with manufacturer specifications and good operating practices.	N/A
Line 4 Roaster Burner	146	Natural Gas	G.W. Barth	10500	Roasting Building	3.97 MMBtu/hr	0.29 tons/yr, 12-month rolling basis	VOC air contamination source with PTE <1 ton/yr VOC	25 Pa. Code §129.111(c)	Exempt	N/A
Emergency Generator	700	Diesel	Katolight	SED75FRJ4	Roasting Building	5.70 gal/hr	N/A	Emergency standby engine operating <500 hours/yr	25 Pa. Code §129.112(c)(10)	Presumptive - Install, maintain, and operate in accordance with manufacturer specifications and good operating practices.	N/A

Table A-1
Blommer Chocolate Company - East Greenville, PA
Summary of RACT III Implications for Existing VOC Emissions Units

Source Description	PADEP Source ID	Fuel	Make	Model	Location	Source Capacity/ Throughput	TVOP No. 46-00198 Emissions Limits	RACT III Classification	RACT III Citation	RACT III Requirement(s)	Comments
Process Sources											
Line 2 Roaster	105	N/A	G.W. Barth	3500 RS	Roasting Building	N/A	10.41 tons/yr, 12-month rolling basis	VOC air contamination source emitting >2.7 tons/yr of VOC	25 Pa. Code §129.114(c),(d),(i)	Alternative RACT Proposal	VOCs are emitted from the processing of cocoa beans and cocoa nibs.
Line 2 Cooler	107	N/A	G.W. Barth	7500 RS	Roasting Building	N/A	1.91 tons/yr, 12-month rolling basis	VOC air contamination source with PTE <2.7 ton/yr VOC	25 Pa. Code §129.112(c)(2)	Presumptive - Install, maintain, and operate in accordance with manufacturer specifications and good operating practices.	VOCs are emitted from the processing of cocoa beans and cocoa nibs.
Line 2 Grinder	108	N/A	G.W. Barth	W2400	Roasting Building	N/A	4.68 tons/yr, 12-month rolling basis	VOC air contamination source emitting >2.7 tons/yr of VOC	25 Pa. Code §129.114(c),(d),(i)	Alternative RACT Proposal	VOCs are emitted from the processing of cocoa beans and cocoa nibs.
Line 1 Roaster	109	N/A	Wolverine	SR3-202	Roasting Building	N/A	N/A	VOC air contamination source emitting >2.7 tons/yr of VOC	25 Pa. Code §129.114(c),(d),(i)	Alternative RACT Proposal	VOCs are emitted from the processing of cocoa beans and cocoa nibs.
Line 1 Feed Hopper/Retention Chamber	110A/110B	N/A	CH Landis	N/A	Roasting Building	N/A	N/A	VOC air contamination source with PTE <2.7 ton/yr VOC	25 Pa. Code §129.112(c)(2)	Presumptive - Install, maintain, and operate in accordance with manufacturer specifications and good operating practices.	When Line 1 is operating at 100% capacity of bean throughput, the PTE for Source 135 is < 2.7 tons/yr of VOC. VOCs are emitted from the processing of cocoa beans and cocoa nibs.
Line 2/3 Winnower	117A	N/A	G.W. Barth	W4000	Roasting Building	N/A	0.87 tons/yr, 12-month rolling basis	VOC air contamination source with PTE <1 ton/yr VOC	25 Pa. Code §129.111(e)	Exempt	VOCs are emitted from the processing of cocoa beans and cocoa nibs.
Line 3 Grinder	118A	N/A	Blommer Machine Company	N/A	Roasting Building	N/A	7.78 tons/yr, 12-month rolling basis	VOC air contamination source emitting >2.7 tons/yr of VOC	25 Pa. Code §129.114(c),(d),(i)	Alternative RACT Proposal	VOCs are emitted from the processing of cocoa beans and cocoa nibs.
Alkalization Processes	124A	N/A	Various	N/A	Roasting Building	N/A	13.05 tons/yr, 12-month rolling basis	VOC air contamination source emitting >2.7 tons/yr of VOC	25 Pa. Code §129.114(c),(d),(i)	Alternative RACT Proposal	VOCs are emitted from the processing of cocoa beans and cocoa nibs.

Table A-1
Blommer Chocolate Company - East Greenville, PA
Summary of RACT III Implications for Existing VOC Emissions Units

Source Description	PADEP Source ID	Fuel	Make	Model	Location	Source Capacity/ Throughput	TVOP No. 46-00198 Emissions Limits	RACT III Classification	RACT III Citation	RACT III Requirement(s)	Comments
Line 3 Roaster	125	N/A	Proctor & Swartz	K14803	Roasting Building	N/A	21.31 tons/yr, 12-month rolling basis	VOC air contamination source emitting >2.7 tons/yr of VOC	25 Pa. Code §129.114(c),(d),(i)	Alternative RACT Proposal	VOCs are emitted from the processing of cocoa beans and cocoa nibs.
Line 2/3 Micronizer & Bucket Elevator	131A	N/A	G.W. Barth	IR6000	Roasting Building	N/A	2.60 tons/yr, 12-month rolling basis	VOC air contamination source with PTE <2.7 ton/yr VOC	25 Pa. Code §129.112(c)(2)	Presumptive - Install, maintain, and operate in accordance with manufacturer specifications and good operating practices.	When Line 1 is operating at 100% capacity of bean throughput, the PTE for Source 135 is < 2.7 tons/yr of VOC. VOCs are emitted from the processing of cocoa beans and cocoa nibs.
Line 1 Grinder	132A	N/A	Blommer Machine Company	N/A	Roasting Building	N/A	5.5 tons/yr, 12-month rolling basis	VOC air contamination source emitting >2.7 tons/yr of VOC	25 Pa. Code §129.114(c),(d),(i)	Alternative RACT Proposal	VOCs are emitted from the processing of cocoa beans and cocoa nibs.
Line 1 Winnower	135	N/A	G.W. Barth	W3000	Roasting Building	N/A	N/A	VOC air contamination source with PTE <2.7 ton/yr VOC	25 Pa. Code §129.112(c)(2)	Presumptive - Install, maintain, and operate in accordance with manufacturer specifications and good operating practices.	When Line 1 is operating at 100% capacity of bean throughput, the PTE for Source 135 is < 2.7 tons/yr of VOC. VOCs are emitted from the processing of cocoa beans and cocoa nibs.
Line 2 Alkalization Mixer	142	N/A	G.W. Barth	N/A	Roasting Building	N/A	1.08 tons/yr, 12-month rolling basis	VOC air contamination source with PTE <2.7 ton/yr VOC	25 Pa. Code §129.112(c)(2)	Presumptive - Install, maintain, and operate in accordance with manufacturer specifications and good operating practices.	VOCs are emitted from the processing of cocoa beans and cocoa nibs.
Line 4 Micronizer	143	N/A	G.W. Barth	IR8000	Roasting Building	N/A	3.29 tons/yr, 12-month rolling basis	VOC air contamination source emitting >2.7 tons/yr of VOC	25 Pa. Code §129.114(c),(d),(i)	Alternative RACT Proposal	VOCs are emitted from the processing of cocoa beans and cocoa nibs.
Line 4 Winnower	144	N/A	G.W. Barth	W8000	Roasting Building	N/A	1.10 tons/yr, 12-month rolling basis	VOC air contamination source with PTE <2.7 ton/yr VOC	25 Pa. Code §129.112(c)(2)	Presumptive - Install, maintain, and operate in accordance with manufacturer specifications and good operating practices.	VOCs are emitted from the processing of cocoa beans and cocoa nibs.
Line 4 Roaster	145	N/A	G.W. Barth	10500	Roasting Building	N/A	0.7 tons/yr, 12-month rolling basis	VOC air contamination source with PTE <1 ton/yr VOC	25 Pa. Code §129.111(c)	Exempt	VOCs are emitted from the processing of cocoa beans and cocoa nibs.
Line 4 Cooler	147	N/A	G.W. Barth	N/A	Roasting Building	N/A	6.42 tons/yr, 12-month rolling basis	VOC air contamination source emitting >2.7 tons/yr of VOC	25 Pa. Code §129.114(c),(d),(i)	Alternative RACT Proposal	VOCs are emitted from the processing of cocoa beans and cocoa nibs.
Line 4 Grinding	148	N/A	G.W. Barth	N/A	Roasting Building	N/A	0.32 tons/yr, 12-month rolling basis	VOC air contamination source with PTE <1 ton/yr VOC	25 Pa. Code §129.111(c)	Exempt	VOCs are emitted from the processing of cocoa beans and cocoa nibs.

Table A-1
Blommer Chocolate Company - East Greenville, PA
Summary of RACT III Implications for Existing VOC Emissions Units

Source Description	PADEP Source ID	Fuel	Make	Model	Location	Source Capacity/ Throughput	TVOP No. 46-00198 Emissions Limits	RACT III Classification	RACT III Citation	RACT III Requirement(s)	Comments
Line 2 Collector	152	N/A	G.W. Barth	N/A	Roasting Building	2 lb/hr cocoa beans	0.09 tons/yr, 12-month rolling basis	VOC air contamination source with PTE <1 ton/yr VOC	25 Pa. Code §129.111(c)	Exempt	VOCs are emitted from the processing of cocoa beans and cocoa nibs.
Line 4 Collector	153	N/A	G.W. Barth	N/A	Roasting Building	N/A	0.29 tons/yr, 12-month rolling basis	VOC air contamination source with PTE <1 ton/yr VOC	25 Pa. Code §129.111(c)	Exempt	VOCs are emitted from the processing of cocoa beans and cocoa nibs.
Other											
Parts Washer	111	N/A	Grey Mills	Handi-Klean PL 422A	Roasting Building	N/A	N/A	Source subject to 25 Pa. Code §129.63a	25 Pa. Code §129.111(a)	Exempt	Source ID 111 is subject to requirements under 25 Pa. Code §129.63a
Regenerative Thermal Oxidizer	C001	Natural Gas	Anguil	75	Roasting Building	N/A	N/A	Thermal oxidizer used primarily for air pollution control	25 Pa. Code §129.112(c)(8)	Presumptive - Install, maintain, and operate in accordance with manufacturer specifications and good operating practices.	RTO shall either maintain destruction efficiency of 98% for VOCs or control VOC emissions to a concentration less than or equal to 20 ppmv as methane.

Table A-2
Blommer Chocolate Company - East Greenville, PA
Summary of RACT III Exempt Sources With PTE of Less Than 1 TPY

Source Description	PADEP Source ID	Source Capacity/ Throughput	TVOP No. 46-00198 Emissions Limits
Line 2 Roaster Burner	106	3.18 MMBtu/hr	0.09 tons/yr, 12-month rolling basis
Line 4 Roaster Burner	146	3.97 MMBtu/hr	0.29 tons/yr, 12-month rolling basis
Line 2/3 Winnower	117A	N/A	0.87 tons/yr, 12-month rolling basis
Line 4 Roaster	145	N/A	0.7 tons/yr, 12-month rolling basis
Line 4 Grinding	148	N/A	0.32 tons/yr, 12-month rolling basis
Line 2 Collector	152	2 lb/hr cocoa beans	0.09 tons/yr, 12-month rolling basis
Line 4 Collector	153	N/A	0.29 tons/yr, 12-month rolling basis

**ATTACHMENT B –
CONTROL TECHNOLOGIES COST ANALYSES**

Table B-1
Capital and Annualized Costs for Operation of Regenerative Thermal Oxidizer (RTO)
Source ID 105: Line 2 Roaster
Blommer Chocolate Company - East Greenville, PA

CAPITAL COSTS			ANNUALIZED COSTS			
COST ITEM	FACTOR	COST (\$)	COST ITEM	FACTOR	UNIT COST	ANNUAL COST (\$)
Direct Capital Costs ^(a)			Direct Annual Costs ^(a)			
<u>Purchased Equipment Costs</u>			<u>Operating and Maintenance ^(d, e)</u>			
RTO System ^(b)		A \$483,858	Operating labor	0.5 hr/shift	\$20.06 per hour	\$10,983
Instrumentation	0.10 A	\$48,386	Supervisory labor	0.15 of operating labor		\$1,648
Freight	0.05 A	\$24,193	Maintenance labor	0.5 hr/shift	\$31.50 per hour	\$17,244
Total Purchased Equipment Cost		B \$556,437	Maintenance materials	1 of maintenance labor		\$17,244
Direct Installation Cost ^(c)		\$13,231	<u>Utilities</u>			
Total Direct Capital Cost (DC)		\$569,668	Electricity ^(f, g)	4.5 kilowatts	\$0.089 per kWh	\$3,524
			Natural Gas ^(h, i)	0.584 MMscf/yr	\$12.31 per 1000 ft ³	\$7,189
			Total Direct Annual Costs			\$57,832
Indirect Capital Costs ^(a)			Indirect Annual Costs ^(a)			
Engineering	0.10 B	\$55,644	Overhead	60% of sum of operating, supervisor, and maintenance labor and maintenance materials		\$28,271
Construction and field expenses	0.05 B	\$27,822	Administrative charges	2% of TCI		\$15,960
Contractor fees	0.10 B	\$55,644	Property taxes	1% of TCI		\$7,980
Start-up	0.02 B	\$11,129	Insurance	1% of TCI		\$7,980
Performance test	0.01 B	\$5,564	Capital recovery	0.0944 CRF x TCI		\$75,327
Total Indirect Cost (IC)		\$155,802	<i>Expected lifetime of equipment:</i>	<i>20 years</i>		
			<i>at</i>	<i>7% interest</i>		
Contingency Costs ^(a)			Total Indirect Annual Costs			\$135,519
Contingency Factor (CF)	0.10		Total Annualized Costs			\$193,351
Contingency Costs (C)	CF(DC+IC)	\$72,547	<u>Cost Effectiveness (\$/ton)</u>			
Total Capital Investment (TCI)		\$798,017	Control Efficiency ^(j) :	98%		
			Uncontrolled Emissions Rate ^(k) :	10.41 tons VOC/yr	Annual Cost/Ton VOC Removed:	\$18,953
			Potential Removed/Destroyed Emissions:	10.20 tons VOC/yr		

(a) Direct and indirect capital and annual costs were estimated based on the U.S. EPA Office of Air Quality Planning and Standards (OAQPS) Control Cost Manual, Seventh Edition (November 2017), Section 1, Chapter 2, and Section 3.2, Chapter 2.

(b) Cost of RTO is an engineering estimate provided by ADWEST Technologies, Inc. for a RETOX 1.1RTO97 system.

(c) Cost of installation provided by ADWEST Technologies, Inc.

(d) Operating and maintenance costs assume the following:

Operating schedule	8,760 hrs/yr
Hours per shift	8 hr/shift

(e) Wage information was provided by Blommer.

(f) Electrical requirement was calculated based on the fan energy usage provided by ADWEST Technologies, Inc.

Fan energy usage	4.5 kW
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(g) Price of electricity (industrial) is September 2022 data for Pennsylvania: https://www.eia.gov/electricity/monthly/epm_table_grapher.cfm?t=epmt_5_6_a

(h) Natural gas requirement was calculated based on the natural gas usage provided by ADWEST Technologies, Inc., and an assumed higher heating value as follows:

RTO natural gas usage	0.068 MMBtu/hr
Natural gas higher heating value	1,020 Btu/scf

(i) Natural gas price (industrial) is September 2022 data for Pennsylvania: http://www.eia.gov/dnav/ng/ng_pri_sum_dcu_spa_m.htm

(j) Post-control VOC emissions are based on ADWEST Technologies, Inc. documentation of overall system efficiency:

Total efficiency of RTO system	98%
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(k) Uncontrolled emissions rate is the VOC emissions limit as given in TVOP No. 46-00198.

The above calculations utilize the following conversion factor: 2,000 lb/ton

**Table B-2
Capital and Annualized Costs for Operation of Regenerative Thermal Oxidizer (RTO)
Source ID 108: Line 2 Grinder
Blommer Chocolate Company - East Greenville, PA**

CAPITAL COSTS			ANNUALIZED COSTS			
COST ITEM	FACTOR	COST (\$)	COST ITEM	FACTOR	UNIT COST	ANNUAL COST (\$)
Direct Capital Costs ^(a)			Direct Annual Costs ^(a)			
<u>Purchased Equipment Costs</u>			<u>Operating and Maintenance ^(d, e)</u>			
RTO System ^(b)		A \$528,022	Operating labor	0.5 hr/shift	\$20.06 per hour	\$10,983
Instrumentation	0.10 A	\$52,802	Supervisory labor	0.15 of operating labor		\$1,648
Freight	0.05 A	\$26,401	Maintenance labor	0.5 hr/shift	\$31.50 per hour	\$17,244
Total Purchased Equipment Cost		B \$607,225	Maintenance materials	1 of maintenance labor		\$17,244
Direct Installation Cost ^(c)		\$15,692	<u>Utilities</u>			
Total Direct Capital Cost (DC)		\$622,917	Electricity ^(f, g)	6.3 kilowatts	\$0.089 per kWh	\$4,934
			Natural Gas ^(h, i)	1.159412 MMscf/yr	\$12.31 per 1000 ft ³	\$14,272
			Total Direct Annual Costs			\$66,325
Indirect Capital Costs ^(a)			Indirect Annual Costs ^(a)			
Engineering	0.10 B	\$60,723	Overhead	60% of sum of operating, supervisor, and maintenance labor and maintenance materials		\$28,271
Construction and field expenses	0.05 B	\$30,361	Administrative charges	2% of TCI		\$17,445
Contractor fees	0.10 B	\$60,723	Property taxes	1% of TCI		\$8,722
Start-up	0.02 B	\$12,145	Insurance	1% of TCI		\$8,722
Performance test	0.01 B	\$6,072	Capital recovery	0.0944 CRF x TCI		\$82,333
Total Indirect Cost (IC)		\$170,023	<i>Expected lifetime of equipment:</i>	<i>20 years</i>		
			<i>at</i>	<i>7% interest</i>		
Contingency Costs ^(a)			Total Indirect Annual Costs			\$145,493
Contingency Factor (CF)	0.10		Total Annualized Costs			\$211,818
Contingency Costs (C)	CF(DC+IC)	\$79,294	Cost Effectiveness (\$/ton)			
Total Capital Investment (TCI)		\$872,234	Control Efficiency ^(j) :	98%		
			Uncontrolled Emissions Rate ^(k) :	4.68 tons VOC/yr	Annual Cost/Ton VOC Removed:	\$46,184
			Potential Removed/Destroyed Emissions:	4.59 tons VOC/yr		

(a) Direct and indirect capital and annual costs were estimated based on the U.S. EPA Office of Air Quality Planning and Standards (OAQPS) Control Cost Manual, Seventh Edition (November 2017), Section 1, Chapter 2, and Section 3.2, Chapter 2.

(b) Cost of RTO is an engineering estimate provided by ADWEST Technologies, Inc. for a RETOX 1.5RTO97 system.

(c) Cost of installation provided by ADWEST Technologies, Inc.

(d) Operating and maintenance costs assume the following:

Operating schedule	8,760 hrs/yr
Hours per shift	8 hr/shift

(e) Wage information was provided by Blommer.

(f) Electrical requirement was calculated based on the fan energy usage provided by ADWEST Technologies, Inc.

Fan energy usage	6.3 kW
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(g) Price of electricity (industrial) is September 2022 data for Pennsylvania: https://www.eia.gov/electricity/monthly/epm_table_grapher.cfm?t=epmt_5_6_a

(h) Natural gas requirement was calculated based on the natural gas usage provided by ADWEST Technologies, Inc., and an assumed higher heating value as follows:

RTO natural gas usage	0.135 MMBtu/hr
Natural gas higher heating value	1,020 Btu/scf

(i) Natural gas price (industrial) is September 2022 data for Pennsylvania: http://www.eia.gov/dnav/ng/ng_pri_sum_dcu_spa_m.htm

(j) Post-control VOC emissions are based on ADWEST Technologies, Inc. documentation of overall system efficiency:

Total efficiency of RTO system	98%
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(k) Uncontrolled emissions rate is the VOC emissions limit as given in TVOP No. 46-00198.

The above calculations utilize the following conversion factor: 2,000 lb/ton

**Table B-3
Capital and Annualized Costs for Operation of Regenerative Thermal Oxidizer (RTO)
Source ID 109: Line 1 Roaster
Blommer Chocolate Company - East Greenville, PA**

CAPITAL COSTS			ANNUALIZED COSTS			
COST ITEM	FACTOR	COST (\$)	COST ITEM	FACTOR	UNIT COST	ANNUAL COST (\$)
Direct Capital Costs ^(a)			Direct Annual Costs ^(a)			
<u>Purchased Equipment Costs</u>			<u>Operating and Maintenance ^(d, e)</u>			
RTO System ^(b)		A \$653,863	Operating labor	0.5 hr/shift	\$20.06 per hour	\$10,983
Instrumentation	0.10 A	\$65,386	Supervisory labor	0.15 of operating labor		\$1,648
Freight	0.05 A	\$32,693	Maintenance labor	0.5 hr/shift	\$31.50 per hour	\$17,244
Total Purchased Equipment Cost		B \$751,942	Maintenance materials	1 of maintenance labor		\$17,244
Direct Installation Cost ^(c)		\$39,692	<u>Utilities</u>			
Total Direct Capital Cost (DC)		\$791,634	Electricity ^(f, g)	50 kilowatts	\$0.089 per kWh	\$39,157
			Natural Gas ^(h, i)	6.028941 MMscf/yr	\$12.31 per 1000 ft ³	\$74,216
			Total Direct Annual Costs			\$160,492
Indirect Capital Costs ^(a)			Indirect Annual Costs ^(a)			
Engineering	0.10 B	\$75,194	Overhead	60% of sum of operating, supervisor, and maintenance labor and maintenance materials		\$28,271
Construction and field expenses	0.05 B	\$37,597	Administrative charges	2% of TCI		\$22,048
Contractor fees	0.10 B	\$75,194	Property taxes	1% of TCI		\$11,024
Start-up	0.02 B	\$15,039	Insurance	1% of TCI		\$11,024
Performance test	0.01 B	\$7,519	Capital recovery	0.0944 CRF x TCI		\$104,058
Total Indirect Cost (IC)		\$210,544	<i>Expected lifetime of equipment:</i>	<i>20 years</i>		
			<i>at</i>	<i>7% interest</i>		
Contingency Costs ^(a)			Total Indirect Annual Costs			\$176,425
Contingency Factor (CF)	0.10		Total Annualized Costs			\$336,917
Contingency Costs (C)	CF(DC+IC)	\$100,218	<u>Cost Effectiveness (\$/ton)</u>			
Total Capital Investment (TCI)		\$1,102,396	Control Efficiency ^(j) :	98%		
			Uncontrolled Emissions Rate ^(k) :	3.68 tons VOC/yr	Annual Cost/Ton VOC Removed:	\$93,414
			Potential Removed/Destroyed Emissions:	3.61 tons VOC/yr		

(a) Direct and indirect capital and annual costs were estimated based on the U.S. EPA Office of Air Quality Planning and Standards (OAQPS) Control Cost Manual, Seventh Edition (November 2017), Section 1, Chapter 2, and Section 3.2, Chapter 2.

(b) Cost of RTO is an engineering estimate provided by ADWEST Technologies, Inc. for a RETOX 11.0RTO97 system.

(c) Cost of installation provided by ADWEST Technologies, Inc.

(d) Operating and maintenance costs assume the following:

Operating schedule	8,760 hrs/yr
Hours per shift	8 hr/shift

(e) Wage information was provided by Blommer.

(f) Electrical requirement was calculated based on the fan energy usage provided by ADWEST Technologies, Inc.

Fan energy usage	50 kW
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(g) Price of electricity (industrial) is September 2022 data for Pennsylvania: https://www.eia.gov/electricity/monthly/epm_table_grapher.cfm?t=epmt_5_6_a

(h) Natural gas requirement was calculated based on the natural gas usage provided by ADWEST Technologies, Inc., and an assumed higher heating value as follows:

RTO natural gas usage	0.702 MMBtu/hr
Natural gas higher heating value	1,020 Btu/scf

(i) Natural gas price (industrial) is September 2022 data for Pennsylvania: http://www.eia.gov/dnav/ng/ng_pri_sum_dcu_spa_m.htm

(j) Post-control VOC emissions are based on ADWEST Technologies, Inc. documentation of overall system efficiency:

Total efficiency of RTO system	98%
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(k) Uncontrolled emissions rate is the actual VOC emissions as given in Blommer's 2021 AIMS Report.

The above calculations utilize the following conversion factor: 2,000 lb/ton

Table B-4
Capital and Annualized Costs for Operation of Regenerative Thermal Oxidizer (RTO)
Source ID 118A: Line 3 Grinder
Blommer Chocolate Company - East Greenville, PA

CAPITAL COSTS			ANNUALIZED COSTS			
COST ITEM	FACTOR	COST (\$)	COST ITEM	FACTOR	UNIT COST	ANNUAL COST (\$)
Direct Capital Costs ^(a)			Direct Annual Costs ^(a)			
<u>Purchased Equipment Costs</u>			<u>Operating and Maintenance ^(d, e)</u>			
RTO System ^(b)		A \$528,022	Operating labor	0.5 hr/shift	\$20.06 per hour	\$10,983
Instrumentation	0.10 A	\$52,802	Supervisory labor	0.15 of operating labor		\$1,648
Freight	0.05 A	\$26,401	Maintenance labor	0.5 hr/shift	\$31.50 per hour	\$17,244
Total Purchased Equipment Cost		B \$607,225	Maintenance materials	1 of maintenance labor		\$17,244
Direct Installation Cost^(c)		\$15,692	<u>Utilities</u>			
Total Direct Capital Cost (DC)		\$622,917	Electricity ^(f, g)	8.1 kilowatts	\$0.089 per kWh	\$6,343
			Natural Gas ^(h, i)	1.477176 MMscf/yr	\$12.31 per 1000 ft ³	\$18,184
			Total Direct Annual Costs			\$71,646
Indirect Capital Costs ^(a)			Indirect Annual Costs ^(a)			
Engineering	0.10 B	\$60,723	Overhead	60% of sum of operating, supervisor, and maintenance labor and maintenance materials		\$28,271
Construction and field expenses	0.05 B	\$30,361	Administrative charges	2% of TCI		\$17,445
Contractor fees	0.10 B	\$60,723	Property taxes	1% of TCI		\$8,722
Start-up	0.02 B	\$12,145	Insurance	1% of TCI		\$8,722
Performance test	0.01 B	\$6,072	Capital recovery	0.0944 CRF x TCI		\$82,333
Total Indirect Cost (IC)		\$170,023	<i>Expected lifetime of equipment:</i>	<i>20 years</i>		
			<i>at</i>	<i>7% interest</i>		
Contingency Costs^(a)			Total Indirect Annual Costs			\$145,493
Contingency Factor (CF)	0.10		Total Annualized Costs			\$217,139
Contingency Costs (C)	CF(DC+IC)	\$79,294	Cost Effectiveness (\$/ton)			
Total Capital Investment (TCI)		\$872,234	Control Efficiency ^(j) :	98%		
			Uncontrolled Emissions Rate ^(k) :	7.78 tons VOC/yr	Annual Cost/Ton VOC Removed:	\$28,480
			Potential Removed/Destroyed Emissions:	7.62 tons VOC/yr		

(a) Direct and indirect capital and annual costs were estimated based on the U.S. EPA Office of Air Quality Planning and Standards (OAQPS) Control Cost Manual, Seventh Edition (November 2017), Section 1, Chapter 2, and Section 3.2, Chapter 2.

(b) Cost of RTO is an engineering estimate provided by ADWEST Technologies, Inc. for a RETOX 2.4RTO97 system.

(c) Cost of installation provided by ADWEST Technologies, Inc.

(d) Operating and maintenance costs assume the following:

Operating schedule	8,760 hrs/yr
Hours per shift	8 hr/shift

(e) Wage information was provided by Blommer.

(f) Electrical requirement was calculated based on the fan energy usage provided by ADWEST Technologies, Inc.

Fan energy usage	8.1 kW
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(g) Price of electricity (industrial) is September 2022 data for Pennsylvania: https://www.eia.gov/electricity/monthly/epm_table_grapher.cfm?t=epmt_5_6_a

(h) Natural gas requirement was calculated based on the natural gas usage provided by ADWEST Technologies, Inc., and an assumed higher heating value as follows:

RTO natural gas usage	0.172 MMBtu/hr
Natural gas higher heating value	1,020 Btu/scf

(i) Natural gas price (industrial) is September 2022 data for Pennsylvania: http://www.eia.gov/dnav/ng/ng_pri_sum_dcu_spa_m.htm

(j) Post-control VOC emissions are based on ADWEST Technologies, Inc. documentation of overall system efficiency:

Total efficiency of RTO system	98%
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(k) Uncontrolled emissions rate is the VOC emissions limit as given in TVOP No. 46-00198.

The above calculations utilize the following conversion factor: 2,000 lb/ton

**Table B-5
Capital and Annualized Costs for Operation of Regenerative Thermal Oxidizer (RTO)
Source ID 124A: Alkalization Processes
Blommer Chocolate Company - East Greenville, PA**

CAPITAL COSTS			ANNUALIZED COSTS			
COST ITEM	FACTOR	COST (\$)	COST ITEM	FACTOR	UNIT COST	ANNUAL COST (\$)
Direct Capital Costs ^(a)			Direct Annual Costs ^(a)			
<u>Purchased Equipment Costs</u>			<u>Operating and Maintenance ^(d, e)</u>			
RTO System ^(b)		A \$528,022	Operating labor	0.5 hr/shift	\$20.06 per hour	\$10,983
Instrumentation	0.10 A	\$52,802	Supervisory labor	0.15 of operating labor		\$1,648
Freight	0.05 A	\$26,401	Maintenance labor	0.5 hr/shift	\$31.50 per hour	\$17,244
Total Purchased Equipment Cost		B \$607,225	Maintenance materials	1 of maintenance labor		\$17,244
Direct Installation Cost ^(c)		\$15,692	<u>Utilities</u>			
Total Direct Capital Cost (DC)		\$622,917	Electricity ^(f, g)	7.1 kilowatts	\$0.089 per kWh	\$5,560
			Natural Gas ^(h, i)	1.125059 MMscf/yr	\$12.31 per 1000 ft ³	\$13,849
			Total Direct Annual Costs			\$66,528
Indirect Capital Costs ^(a)			Indirect Annual Costs ^(a)			
Engineering	0.10 B	\$60,723	Overhead	60% of sum of operating, supervisor, and maintenance labor and maintenance materials		\$28,271
Construction and field expenses	0.05 B	\$30,361	Administrative charges	2% of TCI		\$17,445
Contractor fees	0.10 B	\$60,723	Property taxes	1% of TCI		\$8,722
Start-up	0.02 B	\$12,145	Insurance	1% of TCI		\$8,722
Performance test	0.01 B	\$6,072	Capital recovery	0.0944 CRF x TCI		\$82,333
Total Indirect Cost (IC)		\$170,023	<i>Expected lifetime of equipment:</i>	<i>20 years</i>		
			<i>at</i>	<i>7% interest</i>		
Contingency Costs ^(a)			Total Indirect Annual Costs			\$145,493
Contingency Factor (CF)	0.10		Total Annualized Costs			\$212,021
Contingency Costs (C)	CF(DC+IC)	\$79,294	Cost Effectiveness (\$/ton)			
Total Capital Investment (TCI)		\$872,234	Control Efficiency ^(j) :	98%		
			Uncontrolled Emissions Rate ^(k) :	13.05 tons VOC/yr	Annual Cost/Ton VOC Removed:	\$16,578
			Potential Removed/Destroyed Emissions:	12.79 tons VOC/yr		

(a) Direct and indirect capital and annual costs were estimated based on the U.S. EPA Office of Air Quality Planning and Standards (OAQPS) Control Cost Manual, Seventh Edition (November 2017), Section 1, Chapter 2, and Section 3.2, Chapter 2.

(b) Cost of RTO is an engineering estimate provided by ADWEST Technologies, Inc. for a RETOX 2.0RTO97 system.

(c) Cost of installation provided by ADWEST Technologies, Inc.

(d) Operating and maintenance costs assume the following:

Operating schedule	8,760 hrs/yr
Hours per shift	8 hr/shift

(e) Wage information was provided by Blommer.

(f) Electrical requirement was calculated based on the fan energy usage provided by ADWEST Technologies, Inc.

Fan energy usage	7.1 kW
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(g) Price of electricity (industrial) is September 2022 data for Pennsylvania: https://www.eia.gov/electricity/monthly/epm_table_grapher.cfm?t=epmt_5_6_a

(h) Natural gas requirement was calculated based on the natural gas usage provided by ADWEST Technologies, Inc., and an assumed higher heating value as follows:

RTO natural gas usage	0.131 MMBtu/hr
Natural gas higher heating value	1,020 Btu/scf

(i) Natural gas price (industrial) is September 2022 data for Pennsylvania: http://www.eia.gov/dnav/ng/ng_pri_sum_dcu_spa_m.htm

(j) Post-control VOC emissions are based on ADWEST Technologies, Inc. documentation of overall system efficiency:

Total efficiency of RTO system	98%
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(k) Uncontrolled emissions rate is the VOC emissions limit as given in TVOP No. 46-00198.

The above calculations utilize the following conversion factor: 2,000 lb/ton

Table B-6
Capital and Annualized Costs for Operation of Regenerative Thermal Oxidizer (RTO)
Source ID 125: Line 3 Roaster
Blommer Chocolate Company - East Greenville, PA

CAPITAL COSTS			ANNUALIZED COSTS			
COST ITEM	FACTOR	COST (\$)	COST ITEM	FACTOR	UNIT COST	ANNUAL COST (\$)
Direct Capital Costs ^(a)			Direct Annual Costs ^(a)			
<u>Purchased Equipment Costs</u>			<u>Operating and Maintenance ^(d, e)</u>			
RTO System ^(b)		A \$604,815	Operating labor	0.5 hr/shift	\$20.06 per hour	\$10,983
Instrumentation	0.10 A	\$60,482	Supervisory labor	0.15 of operating labor		\$1,648
Freight	0.05 A	\$30,241	Maintenance labor	0.5 hr/shift	\$31.50 per hour	\$17,244
Total Purchased Equipment Cost		B \$695,537	Maintenance materials	1 of maintenance labor		\$17,244
Direct Installation Cost^(c)		\$26,462	<u>Utilities</u>			
Total Direct Capital Cost (DC)		\$721,999	Electricity ^(f, g)	26.7 kilowatts	\$0.089 per kWh	\$20,910
			Natural Gas ^(h, i)	2.782588 MMscf/yr	\$12.31 per 1000 ft ³	\$34,254
			Total Direct Annual Costs			\$102,282
Indirect Capital Costs ^(a)			Indirect Annual Costs ^(a)			
Engineering	0.10 B	\$69,554	Overhead	60% of sum of operating, supervisor, and maintenance labor and maintenance materials		\$28,271
Construction and field expenses	0.05 B	\$34,777	Administrative charges	2% of TCI		\$20,168
Contractor fees	0.10 B	\$69,554	Property taxes	1% of TCI		\$10,084
Start-up	0.02 B	\$13,911	Insurance	1% of TCI		\$10,084
Performance test	0.01 B	\$6,955	Capital recovery	0.0944 CRF x TCI		\$95,188
Total Indirect Cost (IC)		\$194,750	<i>Expected lifetime of equipment:</i>	<i>20 years</i>		
			<i>at</i>	<i>7% interest</i>		
Contingency Costs^(a)			Total Indirect Annual Costs			\$163,796
Contingency Factor (CF)	0.10		Total Annualized Costs			\$266,078
Contingency Costs (C)	CF(DC+IC)	\$91,675	<u>Cost Effectiveness (\$/ton)</u>			
Total Capital Investment (TCI)		\$1,008,425	Control Efficiency ^(j) :	98%		
			Uncontrolled Emissions Rate ^(k) :	21.31 tons VOC/yr	Annual Cost/Ton VOC Removed:	\$12,741
			Potential Removed/Destroyed Emissions:	20.88 tons VOC/yr		

(a) Direct and indirect capital and annual costs were estimated based on the U.S. EPA Office of Air Quality Planning and Standards (OAQPS) Control Cost Manual, Seventh Edition (November 2017), Section 1, Chapter 2, and Section 3.2, Chapter 2.

(b) Cost of RTO is an engineering estimate provided by ADWEST Technologies, Inc. for a RETOX 6.1RTO97 system.

(c) Cost of installation provided by ADWEST Technologies, Inc.

(d) Operating and maintenance costs assume the following:

Operating schedule	8,760 hrs/yr
Hours per shift	8 hr/shift

(e) Wage information was provided by Blommer.

(f) Electrical requirement was calculated based on the fan energy usage provided by ADWEST Technologies, Inc.

Fan energy usage	26.7 kW
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(g) Price of electricity (industrial) is September 2022 data for Pennsylvania: https://www.eia.gov/electricity/monthly/epm_table_grapher.cfm?t=epmt_5_6_a

(h) Natural gas requirement was calculated based on the natural gas usage provided by ADWEST Technologies, Inc., and an assumed higher heating value as follows:

RTO natural gas usage	0.324 MMBtu/hr
Natural gas higher heating value	1,020 Btu/scf

(i) Natural gas price (industrial) is September 2022 data for Pennsylvania: http://www.eia.gov/dnav/ng/ng_pri_sum_dcu_spa_m.htm

(j) Post-control VOC emissions are based on ADWEST Technologies, Inc. documentation of overall system efficiency:

Total efficiency of RTO system	98%
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(k) Uncontrolled emissions rate is the VOC emissions limit as given in TVOP No. 46-00198.

The above calculations utilize the following conversion factor: 2,000 lb/ton

Table B-7
Capital and Annualized Costs for Operation of Regenerative Thermal Oxidizer (RTO)
Source ID 132A: Line 1 Grinder
Blommer Chocolate Company - East Greenville, PA

CAPITAL COSTS			ANNUALIZED COSTS			
COST ITEM	FACTOR	COST (\$)	COST ITEM	FACTOR	UNIT COST	ANNUAL COST (\$)
Direct Capital Costs ^(a)			Direct Annual Costs ^(a)			
<u>Purchased Equipment Costs</u>			<u>Operating and Maintenance ^(d, e)</u>			
RTO System ^(b)		A \$483,858	Operating labor	0.5 hr/shift	\$20.06 per hour	\$10,983
Instrumentation	0.10 A	\$48,386	Supervisory labor	0.15 of operating labor		\$1,648
Freight	0.05 A	\$24,193	Maintenance labor	0.5 hr/shift	\$31.50 per hour	\$17,244
Total Purchased Equipment Cost		B \$556,437	Maintenance materials	1 of maintenance labor		\$17,244
Direct Installation Cost^(c)		\$13,231	<u>Utilities</u>			
Total Direct Capital Cost (DC)		\$569,668	Electricity ^(f, g)	3.3 kilowatts	\$0.089 per kWh	\$2,584
			Natural Gas ^(h, i)	0.472353 MMscf/yr	\$12.31 per 1000 ft ³	\$5,815
			Total Direct Annual Costs			\$55,518
Indirect Capital Costs ^(a)			Indirect Annual Costs ^(a)			
Engineering	0.10 B	\$55,644	Overhead	60% of sum of operating, supervisor, and maintenance labor and maintenance materials		\$28,271
Construction and field expenses	0.05 B	\$27,822	Administrative charges	2% of TCI		\$15,960
Contractor fees	0.10 B	\$55,644	Property taxes	1% of TCI		\$7,980
Start-up	0.02 B	\$11,129	Insurance	1% of TCI		\$7,980
Performance test	0.01 B	\$5,564	Capital recovery	0.0944 CRF x TCI		\$75,327
Total Indirect Cost (IC)		\$155,802	<i>Expected lifetime of equipment:</i>	<i>20 years</i>		
			<i>at</i>	<i>7% interest</i>		
Contingency Costs^(a)			Total Indirect Annual Costs			\$135,519
Contingency Factor (CF)	0.10		Total Annualized Costs			\$191,036
Contingency Costs (C)	CF(DC+IC)	\$72,547	<u>Cost Effectiveness (\$/ton)</u>			
Total Capital Investment (TCI)		\$798,017	Control Efficiency ^(j) :	98%		
			Uncontrolled Emissions Rate ^(k) :	5.50 tons VOC/yr	Annual Cost/Ton VOC Removed:	\$35,443
			Potential Removed/Destroyed Emissions:	5.39 tons VOC/yr		

(a) Direct and indirect capital and annual costs were estimated based on the U.S. EPA Office of Air Quality Planning and Standards (OAQPS) Control Cost Manual, Seventh Edition (November 2017), Section 1, Chapter 2, and Section 3.2, Chapter 2.

(b) Cost of RTO is an engineering estimate provided by ADWEST Technologies, Inc. for a RETOX 0.7RTO97 system.

(c) Cost of installation provided by ADWEST Technologies, Inc.

(d) Operating and maintenance costs assume the following:

Operating schedule	8,760 hrs/yr
Hours per shift	8 hr/shift

(e) Wage information was provided by Blommer.

(f) Electrical requirement was calculated based on the fan energy usage provided by ADWEST Technologies, Inc.

Fan energy usage	3.3 kW
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(g) Price of electricity (industrial) is September 2022 data for Pennsylvania: https://www.eia.gov/electricity/monthly/epm_table_grapher.cfm?t=epmt_5_6_a

(h) Natural gas requirement was calculated based on the natural gas usage provided by ADWEST Technologies, Inc., and an assumed higher heating value as follows:

RTO natural gas usage	0.055 MMBtu/hr
Natural gas higher heating value	1,020 Btu/scf

(i) Natural gas price (industrial) is September 2022 data for Pennsylvania: http://www.eia.gov/dnav/ng/ng_pri_sum_dcu_spa_m.htm

(j) Post-control VOC emissions are based on ADWEST Technologies, Inc. documentation of overall system efficiency:

Total efficiency of RTO system	98%
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(k) Uncontrolled emissions rate is the VOC emissions limit as given in TVOP No. 46-00198.

The above calculations utilize the following conversion factor: 2,000 lb/ton

Table B-8
Capital and Annualized Costs for Operation of Regenerative Thermal Oxidizer (RTO)
Source ID 143: Line 4 Micronizer
Blommer Chocolate Company - East Greenville, PA

CAPITAL COSTS			ANNUALIZED COSTS			
COST ITEM	FACTOR	COST (\$)	COST ITEM	FACTOR	UNIT COST	ANNUAL COST (\$)
Direct Capital Costs ^(a)			Direct Annual Costs ^(a)			
<u>Purchased Equipment Costs</u>			<u>Operating and Maintenance ^(d, e)</u>			
RTO System ^(b)		A \$604,815	Operating labor	0.5 hr/shift	\$20.06 per hour	\$10,983
Instrumentation	0.10 A	\$60,482	Supervisory labor	0.15 of operating labor		\$1,648
Freight	0.05 A	\$30,241	Maintenance labor	0.5 hr/shift	\$31.50 per hour	\$17,244
Total Purchased Equipment Cost		B \$695,537	Maintenance materials	1 of maintenance labor		\$17,244
Direct Installation Cost^(c)		\$26,462	<u>Utilities</u>			
Total Direct Capital Cost (DC)		\$721,999	Electricity ^(f, g)	31.3 kilowatts	\$0.089 per kWh	\$24,512
			Natural Gas ^(h, i)	4.551765 MMscf/yr	\$12.31 per 1000 ft ³	\$56,032
			Total Direct Annual Costs			
			\$127,663			
Indirect Capital Costs ^(a)			Indirect Annual Costs ^(a)			
Engineering	0.10 B	\$69,554	Overhead	60% of sum of operating, supervisor, and maintenance labor and maintenance materials		\$28,271
Construction and field expenses	0.05 B	\$34,777	Administrative charges	2% of TCI		\$20,168
Contractor fees	0.10 B	\$69,554	Property taxes	1% of TCI		\$10,084
Start-up	0.02 B	\$13,911	Insurance	1% of TCI		\$10,084
Performance test	0.01 B	\$6,955	Capital recovery	0.0944 CRF x TCI		\$95,188
Total Indirect Cost (IC)		\$194,750	<i>Expected lifetime of equipment:</i>	<i>20 years</i>		
			<i>at</i>	<i>7% interest</i>		
			Total Indirect Annual Costs			
			\$163,796			
Contingency Costs^(a)			Total Annualized Costs			
Contingency Factor (CF)	0.10		\$291,459			
Contingency Costs (C)	CF(DC+IC)	\$91,675	Cost Effectiveness (\$/ton)			
Total Capital Investment (TCI)		\$1,008,425	Control Efficiency ^(j) :	98%		
			Uncontrolled Emissions Rate ^(k) :	3.29 tons VOC/yr	Annual Cost/Ton VOC Removed:	\$90,397
			Potential Removed/Destroyed Emissions:	3.22 tons VOC/yr		

(a) Direct and indirect capital and annual costs were estimated based on the U.S. EPA Office of Air Quality Planning and Standards (OAQPS) Control Cost Manual, Seventh Edition (November 2017), Section 1, Chapter 2, and Section 3.2, Chapter 2.

(b) Cost of RTO is an engineering estimate provided by ADWEST Technologies, Inc. for a RETOX 7.8RTO97 system.

(c) Cost of installation provided by ADWEST Technologies, Inc.

(d) Operating and maintenance costs assume the following:

Operating schedule	8,760 hrs/yr
Hours per shift	8 hr/shift

(e) Wage information was provided by Blommer.

(f) Electrical requirement was calculated based on the fan energy usage provided by ADWEST Technologies, Inc.

Fan energy usage	31.3 kW
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(g) Price of electricity (industrial) is September 2022 data for Pennsylvania: https://www.eia.gov/electricity/monthly/epm_table_grapher.cfm?t=epmt_5_6_a

(h) Natural gas requirement was calculated based on the natural gas usage provided by ADWEST Technologies, Inc., and an assumed higher heating value as follows:

RTO natural gas usage	0.53 MMBtu/hr
Natural gas higher heating value	1,020 Btu/scf

(i) Natural gas price (industrial) is September 2022 data for Pennsylvania: http://www.eia.gov/dnav/ng/ng_pri_sum_dcu_spa_m.htm

(j) Post-control VOC emissions are based on ADWEST Technologies, Inc. documentation of overall system efficiency:

Total efficiency of RTO system	98%
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(k) Uncontrolled emissions rate is the VOC emissions limit as given in TVOP No. 46-00198.

The above calculations utilize the following conversion factor: 2,000 lb/ton

**Table B-9
Capital and Annualized Costs for Operation of Regenerative Thermal Oxidizer (RTO)
Source ID 147: Line 4 Cooler
Blommer Chocolate Company - East Greenville, PA**

CAPITAL COSTS			ANNUALIZED COSTS			
COST ITEM	FACTOR	COST (\$)	COST ITEM	FACTOR	UNIT COST	ANNUAL COST (\$)
Direct Capital Costs ^(a)			Direct Annual Costs ^(a)			
<u>Purchased Equipment Costs</u>			<u>Operating and Maintenance ^(d, e)</u>			
RTO System ^(b)		A \$551,241	Operating labor	0.5 hr/shift	\$20.06 per hour	\$10,983
Instrumentation	0.10 A	\$55,124	Supervisory labor	0.15 of operating labor		\$1,648
Freight	0.05 A	\$27,562	Maintenance labor	0.5 hr/shift	\$31.50 per hour	\$17,244
Total Purchased Equipment Cost		B \$633,927	Maintenance materials	1 of maintenance labor		\$17,244
Direct Installation Cost ^(c)		\$19,385	<u>Utilities</u>			
Total Direct Capital Cost (DC)		\$653,312	Electricity ^(f, g)	24.9 kilowatts	\$0.089 per kWh	\$19,500
			Natural Gas ^(h, i)	3.091765 MMscf/yr	\$12.31 per 1000 ft ³	\$38,060
			Total Direct Annual Costs			\$104,678
Indirect Capital Costs ^(a)			Indirect Annual Costs ^(a)			
Engineering	0.10 B	\$63,393	Overhead	60% of sum of operating, supervisor, and maintenance labor and maintenance materials		\$28,271
Construction and field expenses	0.05 B	\$31,696	Administrative charges	2% of TCI		\$18,278
Contractor fees	0.10 B	\$63,393	Property taxes	1% of TCI		\$9,139
Start-up	0.02 B	\$12,679	Insurance	1% of TCI		\$9,139
Performance test	0.01 B	\$6,339	Capital recovery	0.0944 CRF x TCI		\$86,265
Total Indirect Cost (IC)		\$177,500	<i>Expected lifetime of equipment:</i>	<i>20 years</i>		
			<i>at</i>	<i>7% interest</i>		
Contingency Costs ^(a)			Total Indirect Annual Costs			\$151,092
Contingency Factor (CF)	0.10		Total Annualized Costs			\$255,770
Contingency Costs (C)	CF(DC+IC)	\$83,081	<u>Cost Effectiveness (\$/ton)</u>			
Total Capital Investment (TCI)		\$913,893	Control Efficiency ^(j) :	98%		
			Uncontrolled Emissions Rate ^(k) :	6.42 tons VOC/yr	Annual Cost/Ton VOC Removed:	\$40,653
			Potential Removed/Destroyed Emissions:	6.29 tons VOC/yr		

(a) Direct and indirect capital and annual costs were estimated based on the U.S. EPA Office of Air Quality Planning and Standards (OAQPS) Control Cost Manual, Seventh Edition (November 2017), Section 1, Chapter 2, and Section 3.2, Chapter 2.

(b) Cost of RTO is an engineering estimate provided by ADWEST Technologies, Inc. for a RETOX 5.7RTO97 system.

(c) Cost of installation provided by ADWEST Technologies, Inc.

(d) Operating and maintenance costs assume the following:

Operating schedule	8,760 hrs/yr
Hours per shift	8 hr/shift

(e) Wage information was provided by Blommer.

(f) Electrical requirement was calculated based on the fan energy usage provided by ADWEST Technologies, Inc.

Fan energy usage	24.9 kW
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(g) Price of electricity (industrial) is September 2022 data for Pennsylvania: https://www.eia.gov/electricity/monthly/epm_table_grapher.cfm?t=epmt_5_6_a

(h) Natural gas requirement was calculated based on the natural gas usage provided by ADWEST Technologies, Inc., and an assumed higher heating value as follows:

RTO natural gas usage	0.36 MMBtu/hr
Natural gas higher heating value	1,020 Btu/scf

(i) Natural gas price (industrial) is September 2022 data for Pennsylvania: http://www.eia.gov/dnav/ng/ng_pri_sum_dcu_spa_m.htm

(j) Post-control VOC emissions are based on ADWEST Technologies, Inc. documentation of overall system efficiency:

Total efficiency of RTO system	98%
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(k) Uncontrolled emissions rate is the VOC emissions limit as given in TVOP No. 46-00198.

The above calculations utilize the following conversion factor: 2,000 lb/ton