

FROM: Christopher Kissinger *CK* 11/2/23
New Source Review Section

THRU: Tom Bianca, P.E. *TJB* 11/3/23
West Permitting Section Chief

TO: William R. Weaver *WRW* 11/6/23
Air Program Manager

DATE: July 12, 2023

RE: NOV Fiber Glass Systems
Mount Union Plant
Title V Operating Permit No. 31-05005
RACT 3 Case-by-Case Evaluation (Project No. 2585)
Shirley Township, Huntingdon 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).

Introduction

On 12/28/22 Trinity Consultants (Trinity) submitted a RACT 3 Notification on behalf of NOV Fiber Glass Systems (NOV) for the Mount Union Plant operating under Title V Operating Permit (TVOP) No. 31-05005, located in Shirley Township, Huntingdon County. The facility is a major source of VOC that has been in operation prior to August 3, 2018, and therefore, in accordance with 25 Pa. Code § 129.111, is subject to the Department's RACT 3 requirements cited in 25 Pa. Code §§ 129.111—129.115 as they pertain to VOC. The facility is not a major source of NO_x, and is therefore not subject to RACT 3 NO_x requirements.

EPA approved NOV's RACT 2 (at the time operating as Containment Solutions, Inc.) Title V permit modification, published 10/16/20, 85 FR 65718. The modification was issued 7/10/18. There have been no modifications to the facility since the RACT 3 applicability date of October 24, 2016. The full RACT 2 determination/requirements can be found in the attached RACT 2 review memo and at the following link:

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

This notification was made in accordance with 25 Pa. Code §129.115(a). The VOC affected source at the facility is summarized below:

Table 1—RACT-Affected Sources

Source	Name	VOC PTE	RACT 3 provision
101	Layup Areas (ID #1, #2, #3, #4, #5, & #6)	129.1 tpy Per RACT 2 case-by-case	129.114(i)(1)(i)

Exempt RACT 3 Sources

In addition to the sources noted above, the Title V permit for this facility lists a number of sources which are exempt from RACT 2 for VOC because they emit less than 1 tpy, pursuant to 25 Pa. Code §129.112(b):

- 031—York Shipley CO147
- 032A—York Shipley 993-888
- 033—Emergency Engine (0.07 mmBtu/hr) Natural Gas
- 034—Controlled Pyrolysis Metal Parts Cleaning Furnace
- 103—Degreasers
- Five (5) Propane Fired Space Heaters (0.20 mmBtu/hr total)

Case-by-Case RACT 3 Evaluation

The case-by-case RACT 3 source at the facility is the Source ID 101 Layup Areas #1—#6.

Per 25 Pa. Code § 129.114, Alternative RACT proposal and petition for alternative compliance schedule, in subsection (i)“*An owner or operator subject to subsection (a), (b) or (c) and § 129.99 that has not modified or changed a source that commenced operation on or before October 24, 2016, and has not installed and commenced operation of a new source after October 24, 2016, may, in place of the alternative RACT requirement or RACT emission limitation required under subsection (d), submit an analysis, certified by the responsible official, in writing or electronically to the Department or appropriate approved local air pollution*

control agency on or before December 31, 2022, that demonstrates that compliance with the alternative RACT requirement or RACT emission limitation approved by the Department or appropriate approved local air pollution Control agency under § 129.99(e) (relating to alternative RACT proposal and petition for alternative compliance schedule) assures compliance with the provisions in subsections (a)—(c) and (e)—(h), except for sources subject to § 129.112(c)(11) or (i)—(k).”

RACT 2 requirements did not contain presumptive limits for these Layup Areas, it is a source of VOC with a PTE greater than 2.7 tpy not subject to 25 Pa. Code §129.97. Therefore, NOV was required to submit an alternative RACT 2 proposal, pursuant to 25 Pa. Code §129.99(b).

Per the facility’s RACT 2 proposal, “Traditional thermal oxidation systems would require substantial supplemental fuel to be used in order to maintain the required oxidation temperature, making an RTO system a more cost-effective potential control method for this type of low VOC/high flowrate process. Due to the difficulty in estimating actual VOC concentrations in the exhaust gas stream, calculations were not performed to estimate annual fuel costs for the RTO. Even without accounting for supplemental fuel costs, the estimated cost effectiveness of an RTO is approximately \$13,379 per ton of VOC controlled. Therefore, thermal oxidation through the use of an RTO is not cost effective and is not RACT for this process.”

DEP concurred in its RACT 2 determination for this facility, that no economically feasible VOC control technology was available for the affected source. Per DEP’s RACT 2 Case-by-Case Evaluation Memo, dated 4/13/18, “...DEP has determined that the current VOC control/work practices, e.g., pour application technique and non-solvent based cleansing solutions, including the provisions in the current RACT I permit, appear to be key RACT 2 measures for minimizing VOC. The MACT standards of NESHAP Subpart WWWW are also applicable with regard to overall VOC emissions, since almost all VOC emitted at the facility consists of styrene which is regulated by Subpart WWWW.” The facility further proposed recordkeeping and reporting as requirements already contained in the permit as RACT 2, to which DEP concurred.

The facility’s RACT 3 proposal states that:

“NOV is proposing this Alternative RACT Proposal for Layup Areas #1 through #6 as the RACT III compliance strategy pursuant to §129.114(i)(1)(ii) as this source meets the following criteria.

- No presumptive RACT limit under 25 Pa Code §129.112 has been established for the Layup Areas emission source.*
- Source emits more than 2.7 tpy of VOCs (25 Pa Code §129.114(c)).*
- Plant has not modified or changed a source that commenced operation on or before October 24, 2016 (25 Pa Code §129.114(i)(1)).*
- Plant has not installed and commenced operation of a new source after October 24, 2016 (25 Pa Code §129.114(i)(1)).*
- Cost effectiveness associated with the RACT II emission limitation was less than \$12,000 per ton VOC (25 Pa Code §129.114(i)(2)).*

Under this option, the facility asserts that the alternative RACT requirement established as RACT II Proposal is sufficient to meet RACT III requirements, specifically Pa Code §129.114(a) through (c) and (e) through (h). This RACT Proposal will demonstrate that the permit limits, established when PADEP approved the RACT II Proposal, are sufficient to demonstrate compliance with RACT III requirements at the Mt. Union Plant.”

NOV therefore asserts that it qualifies under 129.114(i)(1)(ii), which provides that “*The owner or operator of a subject source or facility 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: (ii) 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:*” [required information is listed as (A)-(F)]

DEP assesses that 129.114(i)(1)(i) would apply in this case, instead of 129.114(i)(1)(ii), in light of the above quoted information from the RACT 2 proposal and associated DEP review memo, indicating cost-effectiveness was \$13,379 per ton VOC removed.

DEP’s 4/13/18 RACT 2 review memo assessed the technical feasibility of the available control options for the Layup Areas as follows [Note: The facility was under previous ownership during the RACT 2 evaluation as Containment Solutions (CSI). This is why CSI is referenced in the quoted memo instead of NOV.]:

[begin quote from RACT 2 memo]

Control Option	CSI’s evaluation of Control Option	CSI deems option Technically feasible?	DEP Concur?
Thermal Oxidizer	<p>Due the nature of CSI’s operations, air from the main mandrel areas is exhausted at a high flowrate, with a low concentration of VOC. The application of traditional thermal oxidation for this type of process is challenging, and would require a large energy input to maintain feasible oxidation reaction. The RBLC does not indicate that direct flame thermal oxidation has been implemented on any similar process types. Further, 40 CFR Subpart WWWW does not conclude that any add-on controls are considered MACT for the FRP process.</p> <p>However, a potentially feasible thermal oxidation process is available, which utilizes a VOC concentrator prior to a traditional RTO system. The RBLC lists an RTO system with a VOC concentrator for facility in a similar industry, although this facility manufactures different products utilizing a different molding technique from the Mt. Union plant. The VOC concentrator in this type of system consists of a zeolite adsorption media, which removes up to 95% of the VOCs from the exhaust stream. The VOC are then desorbed from the media using a high temperature, low volume gas stream, and are oxidizing using a RTO. By concentrating the VOCs, a more efficient oxidation process is possible on the lower volume gas stream with a higher concentration of VOCs. This type of technology is technically feasible for CSI’s FRP process.</p>	Yes	Yes
Catalytic Oxidizer	<p>To employ catalytic oxidation on FRP processes at CSI, the high volume of gas collected by the exhaust vents would require multiple oxidizers for each stack. In addition, the particulate emissions associated with the mandrel process creates the potential problem of fouling the catalyst with particulate, thus reducing the efficiency of the oxidation reaction. The prevention of fouling would require additional fan capacity to overcome the system losses. The RBLC does not list catalytic oxidation for FRP processes in the database, and the applicable NESHAP Subpart WWWW does not conclude that any add-on controls are considered MACT. CSI considers this technology to be technically infeasible and eliminates catalytic</p>	No	Yes

Control Option	CSI's evaluation of Control Option	CSI deems option Technically feasible?	DEP Concur?
	oxidation as RACT. Further evaluation of the technology is not required.		
Carbon Adsorption	Similar to catalytic oxidation, exhausting the high-volume gas stream into a potential carbon adsorption unit would require pre-filtering for particular matter. In addition, the styrene evolved from the fiberglass tank manufacturing process is potentially reactive since the resin has already been catalyzed. Once catalyzed to form a polymer, the material may clog the carbon pores, reducing capacity and bed life. The styrene recovered from the activated carbon would require further treatment and disposal. The RBLC does not list carbon adsorption for FRP processes in the database, and the applicable NESHAP Subpart WWWW does not conclude that any add-on controls are considered MACT. Therefore, CSI believes carbon adsorption to be technically infeasible for the FRP process, and eliminates carbon adsorption as RACT. Further evaluation of the technology is not required.	No	Yes
Process Changes	<p>The current practices utilized by CSI on the main mandrel processing areas have been implemented in order to minimize VOC emissions. CSI utilizes a pour technique to apply resin to the spinning mandrel, rather than using an atomized spray process. The pour method reduces the volatilization of VOCs from the resin, thus reducing overall emissions. In addition, CSI uses non-solvent based clean-up solution, therefore further reducing the potential for VOC emissions.</p> <p>The use of resin with a lower VOC content is a possible change that could be implemented to further reduce potential VOC emissions. However, CSI is limited in what resins are available to manufacture the products produced at the Mt. Union plant. CSI's process uses corrosion-resistant, high strength resin. This is necessary for the tank walls to be resistant to fuels including alcohols. These tanks are Underwriter's Laboratory (UL) 1316 listed for this application. To obtain that listing, tank samples must be tested by UL under fuel exposure and meet specific minimum property requirements. As a result, CSI is limited to manufacturing UL 1316 listed tanks with resin approved by UL. When the resin cures, the styrene in the resin is used in the polymerization to develop the full cross linking of the polymer that yields the required corrosion-and-fuel-resistant properties. Therefore, CSI believes that there are not additional process changes that can be implemented or that are technically feasible for the FRP process, and eliminates process changes as RACT.</p>	No	Yes
Refrigerated Condenser	This technology has not "been commercially demonstrated on FRP processes similar to those at the Mt. Union plant" and has been deemed technically infeasible.	No	Yes
Flare	This technology has not "been commercially demonstrated on FRP processes similar to those at the Mt. Union plant" and has been deemed technically infeasible.	No	Yes

[end quote from RACT 2 memo]

RACT 3 129.114(i)(1)(i) ANALYSIS:

With the preceding RACT 2 case-by-case analyses as background, we now turn to the re-evaluation required under 129.114(i)(1)(i)(A)-(E). This requires the applicant to include the following information in the

abbreviated RACT 3 case by-case analysis: [requirements in **bold**; discussion following each requirement in regular font]

(A) 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.

NOV's provided the following statement with their RACT 3 submittal:

“NOV reviewed the RACT/Best Available Control Technology (BACT)/Lowest Achievable Emission Rate (LAER) Clearinghouse database to identify VOC control technologies for FRP and other fiberglass manufacturing types that have been installed since 2016. All control technologies and techniques identified during this review were the same as those potentially applicable VOC control technologies identified during the RACT II analysis including:

- ▶ *Thermal oxidizer,*
- ▶ *Catalytic oxidizer,*
- ▶ *Carbon adsorption, and*
- ▶ *Process techniques (e.g., non-atomized application techniques).”*

DEP concurs, based on its knowledge of available VOC control techniques, and a review of the RACT/BACT/LAER Clearinghouse, that no new VOC control technologies, or significant changes to the technical capability of the existing technology, are available in this case.

(B) A list of the technically feasible air cleaning devices, air pollution control technologies or techniques previously identified and evaluated under § 129.92(b)(1)—(3) in the written RACT proposal submitted under § 129.99(d) and approved by the Department or appropriate approved local air pollution control agency under § 129.99(e).

NOV's RACT 3 submittal included a list of the air cleaning devices, air pollution control technologies or techniques previously identified and evaluated under RACT 2.

(C) A summary of the economic feasibility analysis performed for each technically feasible air cleaning device, air pollution control technology or technique listed in clause (B) and the cost effectiveness of each technically feasible air cleaning device, air pollution control technology or technique as submitted previously under § 129.99(d) or as calculated consistent with the “EPA Air Pollution Control Cost Manual” (6th Edition), EPA/452/B-02-001, January 2002, as amended.

NOV's RACT 3 submittal included the statement that: *“An update to the economic feasibility analysis provided as part of the RACT II Case-by-Case Proposal of is provided in Appendix B of this RACT Proposal. The analysis considered RTO with VOC concentrator to control VOCs associated with the layup areas and shows a cost per ton of VOC reduced of more than \$12,000.”* This analysis was later revised as discussed below in (F).

(D) A statement that an evaluation of each economic feasibility analysis summarized in clause (C) demonstrates that the cost effectiveness remains equal to or greater than \$7,500 per ton of NOx emissions reduced or \$12,000 per ton of VOC emissions reduced.

NOV's RACT 3 submittal included the statement that: *“An updated RACT III economic feasibility analysis of using RTO with VOC concentrator to control VOCs associated with the layup areas is not less than \$12,000 per ton (see Appendix B of this RACT Proposal). Thus, NOV is asserting that the permit conditions established as*

part of the RACT II analysis (see Condition #001 of Section E for Source Group 06 of Title V Permit 31-05005) are sufficient to meet RACT III requirements.” This analysis was later revised as discussed below in (F).

(E) Additional information requested by the Department or appropriate approved local air pollution control agency that may be necessary for the evaluation of the analysis.

On 4/12/23, DEP sent a technical deficiency (TD) letter (Attachment A) requesting further documentation of NOV’s updated economic feasibility analysis. On 6/9/23, NOV provided a response including an updated economic feasibility analysis (Attachment A). DEP’s assessment of the revised economic feasibility analysis is below.

DEP ASSESSMENT:

Based on the revised economic feasibility analysis, DEP concurs that the technically feasible add-on controls for the Layup Areas remain cost-ineffective for RACT 3. Table 2 provides a summary of the RACT 3 cost effectiveness for the Layup Areas, as revised by NOV:

Table 2—Layup Area RACT 3 Economic Feasibility

Source ID	Source Name	Control Technology	NOx Emissions Before Control	NOx Emissions After Control	Total Annual Cost of Control Equipment	NO _x (\$/Ton)
101	Layup Areas (ID #1, #2, #3, #4, #5, & #6)	RTO w/ VOC Concentrator	129.1 tpy	41 tpy	\$1,336,616	\$15,179

The revised analysis was based on an average of two (2) vendor quotes obtained in response to DEP’s TD letter and indicates a cost effectiveness of \$15,176/ton VOC removed. It should be noted the revised analysis includes increased operator and maintenance labor rates, which NOV states, “*reflect the actual rates used for labor at the Mt. Union facility including benefits.*” The analysis also used an interest rate of 7% (5.5% being a default value). Even using the default interest rate value and the most recent available labor rate information for Pennsylvania (per BLS Occupational Employment and Wage Statistics for May 2021), cost effectiveness only drops to \$14,017/ton VOC removed. Consequently, DEP did not require a second revision to the economic feasibility analysis.

Per the DEP’s RACT 2 11/7/17 RACT 2 review memo, “*...DEP has determined that the current VOC control technology/work practices, e.g., pour application technique and non-solvent based cleansing solutions, including the provisions in the current RACT 1 permit, appear to be key RACT 2 measures for minimizing VOC. The MACT standards of NESHAP Subpart WWWW are also applicable with regard to overall VOC emissions, since almost all the VOC emitted at the facility consists of styrene which is regulated by Subpart WWWW.*”

The Department has reviewed the source information, control technologies or measures, and cost analysis performed by the company. 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 review of these materials, 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 affected sources at this facility, and that the provisions imposed as case-

by-case RACT 2 for the Layup Areas, as found in Group 06 of the facility's current Title V permit, assure compliance with requirements of RACT 3 in § 129.111 - § 129.115, for the affected equipment, as follows:

TVOP, Section E, Group 06 – RACT 2 Requirements

Layup Areas (ID #1, #2, #3, #4, #5, & #6) (Source ID 101)

ADDITIONAL REQUIREMENTS

RACT 2 requirements [25 Pa. Code §§ 129.96 – 129.100]

- a. The total facility resin use shall not exceed 12,910,000 pounds during any consecutive 12-month period.*
- b. The resin pouring layup method of tank fabrication, as described in the application, shall be employed during the fabrication of the cylindrical tank shells while operating the five large production layup mandrels.*
- c. Solvent -based resin cleanup solutions shall not be used at this facility.*
- d. The production activities, at this facility, shall not exceed 8,736 hours during any consecutive 12- month period.*
- e. Manufacturer supplied VOC Data sheets and/or Material Safety Data Sheets (MSDS) for all resins applied at this facility within the most recent five (5) years shall be maintained at the above location and shall be made available to the Department at any time.*
- f. The permittee shall maintain the daily records of the following information for the layup areas:*
 - 1) resin identification;*
 - 2) daily resin use in gallons and pounds;*
 - 3) pounds per month of resin used;*
 - 4) pounds of VOC emissions per month from resin use;*
 - 5) hours of operation.*

These records shall be maintained on-site for a minimum of five (5) years and shall be made available upon the Department's request.

g. Annual reports containing, but not limited to, the following data shall be submitted to DEP for all resins used by the layup area operations. The report for January 1 through December 31 is due no later than March 1 of the following year for each operating year authorized by the operating permit.

- 1) resin identification;*
- 2) pounds per month of resin used;*
- 3) pounds of VOC and HAP (Styrene) emissions per month from resin use;*
- 4) hours of operation each month.*

h. Source 101 shall comply with applicable provisions of 40 CFR Part 63, Subpart WWWW—National Emissions Standards for Hazardous Air Pollutants: Reinforced Plastic Composites Production.

Note: The above conditions shall supersede the SIP-ed RACT 1 requirements for this facility, upon approval by EPA as a SIP revision.

RACT 1

As noted in DEP's 4/13/18 RACT 2 review materials, the facility's RACT 1 requirements were imposed in Operating Permit 31-02005, issued 4/9/99 (published by EPA 8/6/01, 66 FR 40891). DEP's RACT 2 determination included provisions at least as stringent as RACT 1 for the Layup Areas. The RACT 1 requirements can be found in Group 05 of the facility's current Title V permit.

Recommendations

If a source was previously subject to RACT 2 case-by-case determinations, and that source has not been modified or changed, the owner or operator may, in lieu of doing another full case-by-case proposal for RACT 3 submit a limited analysis, as specified in 25 Pa. Code Section 129.114(i). Unless otherwise required, this submission does not need to be part of a plan approval or operating permit modification and no fee would be charged.

No changes are needed to the facility's Title V permit, as the case-by-case determination for RACT 3 for this facility is identical to RACT 2, and hence is as stringent as RACT 2.

cc: OnBase

Attachments:

- A. Technical Deficiency Response Letter
- B. CPI Quote
- C. NESTEC Quote
- D. Technical Deficiency Letter
- E. DEP RACT 2 Review Memo

Weaver, William (DEP)

From: David Simmons <David.Simmons@trinityconsultants.com>
Sent: Tuesday, June 20, 2023 1:37 PM
To: Kissinger, Christopher
Cc: Fiore, Joe R; Bianca, Tom; Weaver, William (DEP); Christie Heath; Joe Maiale
Subject: RE: [External] Response to TECHNICAL DEFICIENCY LETTER: NOV Fiber Glass Systems - Alternative RACT 3 Proposal
Attachments: P-232223-R0-Trinity.pdf; CPI Quote 23-9162 R0 Trinity Consultants - NOV Mt. Union RCS-116.pdf

Mr. Kissinger, we have reviewed the quotes and have not identified any confidential information. The two quotes are attached.

Please let us know if you have any further questions.

David Simmons
Managing Consultant

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From: Kissinger, Christopher <chrkissing@pa.gov>
Sent: Wednesday, June 14, 2023 2:50 PM
To: David Simmons <David.Simmons@trinityconsultants.com>
Cc: Fiore, Joe R <joe.fiore@nov.com>; Bianca, Tom <tbianca@pa.gov>; Weaver, William (DEP) <wiweaver@pa.gov>; Christie Heath <CHeath@trinityconsultants.com>; Joe Maiale <Joseph.Maiale@trinityconsultants.com>
Subject: RE: [External] Response to TECHNICAL DEFICIENCY LETTER: NOV Fiber Glass Systems - Alternative RACT 3 Proposal

Mr. Simmons and Mr. Fiore,

Thank you for your response. The two vendor quotes used as the basis for the revised economic analysis must be included to validate these figures. Please provide copies of these vendor quotes. If there is any information in these quotes you deem confidential, please see below:

The Department has a specific procedure for deciding confidentiality requests from source owners made under Section 13.2 of the Air Pollution Control Act, 35 P.S. Section 4013.2. This procedure requires that source owners submit their request in writing to the Department. The request must specifically designate which items of information the source owner wishes the Department to treat confidentially, along with a reason why they should be treated in this manner. The word "confidential" on a page or plan sheet submitted to the Department has no validity by itself. Each item must be identified and justification presented per Section 13.2 for why it warrants confidential treatment.

Per Section 13.2 of the APCA, information can generally qualify for confidential treatment if it is not emission data and if disclosure of the information would divulge production or sales figures or methods, or would divulge a unique process or production, or would otherwise adversely affect competitive position by revealing trade secrets. Below is the exact text of Section 13.2 of the APCA. Please note that the word "confidential" on a page or plan sheet submitted to DEP has no validity by itself. Each item must be identified and justification presented per Section 13.2 for why it warrants confidential treatment.

In order to request confidential treatment for information in any submission, you must submit a redacted version of the original relevant document with the confidential information blacked out (and thus suitable for public disclosure), along with a letter of request containing a table identifying the page and line number of each redaction, along with a justification for each redacted item as to why it should be deemed confidential under the specific criteria allowed under Section 13.2 of the APCA. DEP’s final decision on the request will be sent to you in writing, along with a notice of appeal rights in the event the request is denied. Please be aware that if you do not provide adequate justification for each redacted item that it meets one of the specific criteria for confidential treatment under Section 13.2 of the APCA, your request may be denied.

It is noted that you have submitted a public and confidential version of the application, where the confidential pages are removed from the public version in lieu of blacking out this information. Please review the above process to request confidential status, and provide a basis for confidential treatment in the manner described and indicate why the entire page should be redacted instead of specific details or revise the confidentiality request in accordance with the process described above.

Excerpt from “AIR POLLUTION CONTROL ACT” Act of 1959, P.L. 2119, No. 7.87: Section 13.2. Confidential Information.-- All records, reports or information obtained by the department or referred to at public hearings under the provisions of this act shall be available to the public, except that upon cause shown by any person that the records, reports or information, or a particular portion thereof, but not emission data, to which the department has access under the provisions of this act, if made public, would divulge production or sales figures or methods, processes or production unique to such person or would otherwise tend to affect adversely the competitive position of such person by revealing trade secrets, including intellectual property rights, the department shall consider such record, report or information, or particular portion thereof confidential in the administration of this act. The department shall implement this section consistent with sections 112(d) and 114(c) of the Clean Air Act. Nothing herein shall be construed to prevent disclosure of such report, record or information to Federal, State or local representatives as necessary for purposes of administration of any Federal, State or local air pollution control laws, or when relevant in any proceeding under this act. (13.2 amended July 9, 1992, P.L.460, No.95). [25 Pa. Code Section 127.12(d)]

Example Confidential Information Log

Page # in Document	Description	Basis for Confidential Treatment as Identified in the Pennsylvania Air Pollution Control Act, 35 P.S. § 4013.2

Thank you,

Christopher Kissinger, E.I.T. | AQE
 Department of Environmental Protection
 Southcentral Regional Office
 909 Elmerton Avenue | Harrisburg, PA 17110
 Phone: 717.705.4872 | Fax: 717.705.4830
www.dep.pa.gov

From: Kissinger, Christopher

Sent: Friday, June 9, 2023 11:52 AM

To: David Simmons <David.Simmons@trinityconsultants.com>

Cc: Fiore, Joe R <joe.fiore@nov.com>; Bianca, Tom <tbianca@pa.gov>; Weaver, William (DEP) <wiweaver@pa.gov>; Christie Heath <CHeath@trinityconsultants.com>; Joe Maiale <Joseph.Maiale@trinityconsultants.com>

Subject: RE: [External] Response to TECHNICAL DEFICIENCY LETTER: NOV Fiber Glass Systems - Alternative RACT 3 Proposal

Mr. Simmons,

We are in receipt of your response letter. Thank you for your work on this. I will reach out if there are any further questions.

Thanks,
Chris

From: David Simmons <David.Simmons@trinityconsultants.com>

Sent: Thursday, June 8, 2023 4:16 PM

To: Kissinger, Christopher <chrkissing@pa.gov>

Cc: Fiore, Joe R <joe.fiore@nov.com>; Bianca, Tom <tbianca@pa.gov>; Weaver, William (DEP) <wiweaver@pa.gov>; Christie Heath <CHeath@trinityconsultants.com>; Joe Maiale <Joseph.Maiale@trinityconsultants.com>

Subject: [External] Response to TECHNICAL DEFICIENCY LETTER: NOV Fiber Glass Systems - Alternative RACT 3 Proposal

ATTENTION: This email message is from an external sender. Do not open links or attachments from unknown senders. To report suspicious email, use the [Report Phishing button in Outlook](#).

Mr. Kissinger, we are submitting this response letter on behalf of NOV Fiberglass Systems (NOV). The NOV contact (Joe Fiore) is copied on this email.

Please contact either Joe Fiore or me if you have any questions.

David Simmons

Managing Consultant

D 240.379.6885 O 240.379.7490 x2105

5320 Spectrum Dr. Suite A | Frederick, MD 21703

Email: David.Simmons@trinityconsultants.com

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PROPOSAL: P-232223-R0

Trinity Consultants

5320 Spectrum Dr. Suite A, Frederick, MD 21703

DAVID SIMMONS

TRINITY CONSULTANTS

532 Spectrum Dr. Suite A, Frederick, MD 21703

C: 240-379-6885

SUBJECT: FIBERGLASS TANK MANUFACTURING EMISSION CONTROL SYSTEM

NESTEC, Inc. is pleased to provide you with our budgetary proposal for a NESTEC concentrator and regenerative thermal oxidizer (RTO) system. The proposed RTO system has been designed to process a maximum flowrate of 116,373 SCFM (wet) from upstream fiberglass tank manufacturing exhaust points. The proposed system is based upon the design information provided by Trinity Consultants and Cecco Equipment.

Exhaust from the upstream manufacturing process will pass through two (2) VOC concentrators to reduce the volume and increase the VOC content of the process gas reporting to the RTO system. Bypasses for each concentrator system are provided along with ductwork for the purified air discharged from the concentrators to the exhaust stack.

The Concentrator system scope include the two (2) complete concentrator systems (each processing 50% of the total flow), dedicate concentrator FD fans and process heaters. The RTO system scope of supply includes one (1) complete RTO system with PLC control system, instrumentation, FD fan and exhaust stack. The system includes one (1) induced-draft fan located at the discharge of the RTO.

The RTO system has been designed for a 34 lb/hr VOC loading, 95% thermal energy recovery (TER) and 98% destruction removal efficiency (DRE). The expected combined efficiency from the concentrator and RTO will be 95% DRE. Refer to Section 2.0 for additional information on the process gas conditions, system performance, and utility information.

The NESTEC RTO system has several technical advantages, including:

- High thermal efficiency design
- Fast acting poppet valve design
- Advanced control system, including thermal alignment and other unique featured for improved operation.
- Exhaust fan designed with test block allowance, additional 10% flow and 21% static pressure.

We are very excited about the opportunity and hope our proposal is well received. If we can be of any further assistance, please do not hesitate to contact us at your earliest convenience.

Best regards,



JAYMIE DEEMER

PRESIDENT – NESTEC, INC.

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1.0 TECHNICAL OVERVIEW

1.1 PROJECT OVERVIEW

Trinity Consultants is pursuing a project that will require a VOC emission control system from an upstream fiberglass tank manufacturing process. Exhaust gas from the emission points will be motivated towards two (2) inlet concentrator FD fans (transport ductwork from emission points to concentrators inlet by others) where the concentrators will produce a lower volume, higher VOC concentration exhaust stream for the downstream RTO system. The concentrated exhaust streams will combine near the discharge of each concentrator, pass through the RTO FD fan and into a single RTO system for VOC control. The cleaned process gas from the RTO will discharge to atmosphere via a common exhaust stack. Purified air produced within the concentrator system will bypass the RTO and report directly to system exhaust stack.



2.0 DESIGN BASE

2.1 PROCESS GAS CONDITIONS

The equipment will be designed to operate reliably and consistently in accordance with the basic design information provided below.

DESIGN CONDITIONS SUMMARY		
DESCRIPTION	DESIGN CONDITION	UNIT(S)
Process Exhaust:		
Flow Rate:	116,373	SCFM (wet)
	122,574	ACFM
Temperature:	80	°F
Moisture Content (assumed):	0.015	lb H ₂ O/lb DA
PM Loading (assumed):	< 0.005	gr/dscf
Inlet VOC Loading (assumed):	34	lb/hr
VOC Type:	Stryene / Methylstryrene / MEK / Toluene / Acetone	
RTO Outlet/Exhaust Stack:		
Flow Rate: ¹	156,708	SCFM (wet)
	173,929	ACFM
Temperature:	109	°F
Moisture Content:	0.015	lb H ₂ O/lb DA
Combined VOC Destruction Efficiency (RTO+Concentrator):	≥ 95	%
RTO Thermal Energy Recovery:	≥ 95	%
Oxidation Temperature:	1,525 – 1,650	°F

¹ Includes RTO combustion air

2.2 PRELIMINARY MOTOR/LOAD LIST

The preliminary electrical loads for the proposed system are stated below.

MOTOR/LOAD LIST							
DESCRIPTION	HP/kVA	QTY	TYPE	V	PH	HZ	RPM
Concentrator System							
Concentrator FD Fan	100 HP	2	N/A	480	3	60	N/A
RTO System							
System FD Fan	200 HP	1	VFD	480	3	60	1,800
Combustion Air Fan	7.5 HP	1	VFD	480	3	60	1,800
PLC Control System	4.8 kVA	1	N/A	120	1	60	N/A

2.3 UTILITY LIST

The preliminary utilities required for the proposed system are stated below.

UTILITY LIST		
DESCRIPTION	DESIGN CONDITION	UNIT(S)
Connected Electrical Load:	Per Table 2.2 Above	kVA Connected
	249	kW
Estimated Natural Gas Consumption ¹ :	5.35	MMBTU/hr
Compressed Air: ²	12	SCFM

2.4 MISCELLANEOUS SYSTEM DESIGN

MISCELLANEOUS SYSTEM DESIGN		
DESCRIPTION	DESIGN CONDITION	UNIT(S)
Elevation (assumed):	500	feet above sea level
Equipment Pressure Rating:	± 30	inches water column
Hazardous Area Designation:	N/A	

¹ Expected natural gas consumption is based on the design inlet flow with VOC contribution. Natural gas use is based on a natural gas net heating value of 1,000 BTU/ft³. Natural gas supply is to be ≥ 5 psig.

² Instrument grade with -40 °F dewpoint

3.0 SCOPE OF SUPPLY

Specifications and descriptions for the scope of supply are stated in this section. Refer to this section for specifications, details and quantities related to the proposed scope of supply.

3.1 CONCENTRATOR & RTO SYSTEM

- NESTEC system engineering and project management
- Combined system ductwork header to distribute flow to each concentrator
- Two (2) concentrator FD fans Arrangement 8 (preliminary), TEFC motor, bearing RTDs and single axis vibration monitoring
- Two (2) rotary concentrator vessels with specific zeolite/media for VOC constituents. Includes process, cooling and desorption air stages with direct fired heater system.
 - Each concentrator is equipped with isolation dampers for both the purified air and desorption air streams.
 - Includes combined outlet ductwork (80" dia., approx. 50' length) for the purified air from the concentrator to the exhaust stack
- One (1) system RTO FD fan. Arrangement 8, TEFC motor, bearing RTDs and single axis vibration monitoring
- Interconnecting ductwork network from the discharge of the concentrator to the inlet of the RTO system.
- One (1) RTO system complete with two (2) heat recovery chambers, one (1) combustion chambers, two (2) fast acting poppet diverter valves and one (1) lot of inlet/outlet manifolds
 - RTO structural steel and access facilities, stair/ladder access to the main burner platforms
 - Internal insulation consisting of ceramic fiber insulation modules (6" thick, 10# density) for the heat recovery and combustion chambers
 - One (1) lot of structured flow distribution and heat recovery media design to achieve the TE offered in Section 2.1.
 - Direct-spark style burner (1 total), fuel train with burner management system and associated NFPA 86 safety components, and combustion blower(s)
 - Miscellaneous system dampers: process inlet isolation, fresh air
- System exhaust stack with a 50' discharge elevation
- The inlet process wetted materials of the RTO system will be constructed of A-36 carbon steel, the RTO cold face will be T-304L SS and non-process wetted and outlet materials of components will be constructed of A-36 carbon steel.
- PLC/Control system for the concentrators and RTO. Allen-Bradley common ethernet enabled CompactLogix PLC. A remote I/O panel located near the equipment foundation as required.
- 30-days of NESTEC construction advisor services to support the equipment mechanical and electrical installation (install by others)
- 20-days of NESTEC on-site services to assist with the start-up and operator training of the supplied equipment.

4.0 COMMERCIAL

Pricing and commercial terms for the scope of supply specified in Section 3.0, is presented in this section.

4.1 PRICING (+/-20%)

DESCRIPTION	PRICE
NESTEC Engineering, Concentrator and RTO System (Equipment Only)	\$2,185,000
Construction Supervision and On-site Services	\$123,000

FREIGHT

FOB point of fabrication/manufacture, prepay and add. Fabrication is quoted as US based.

VALIDITY

All prices quoted herein are valid for acceptance within thirty (30) days from the date of this proposal.

TAX EXEMPTION STATUS

*As a provider of pollution control solutions to manufacturers of various industries, many of NESTEC's customers enjoy a tax exemption status in most jurisdictions. Please submit a copy of your applicable exemption certificate(s) to kheimbach@nestecinc.com and the corresponding state sales tax will be omitted from future invoices. **NOTE that, sales and other corresponding taxes are not included in the estimated value of this, or any other proposal furnished by NESTEC.***

4.2 PROPOSED PAYMENT TERMS

PROPOSED PAYMENT TERMS (EQUIPMENT SUPPLY)

%	PAYMENT MILESTONE (NET 30)
20%	With purchase order
15%	With submittal of approval drawings (PFD, P&ID, and GA)
30%	With delivery of major materials to the fabrication shop
30%	Upon notification of readiness to ship
5%	Upon satisfactory performance testing or 180 days from shipment, whichever occurs first

4.3 MATERIAL ESCALATION - EQUIPMENT

Due to current volatility in the metal materials market, prices are subject to change based on the cost of metal materials at the time of procurement, up until receipt of purchase order and the first payment milestone.

The equipment price is to be adjusted from the proposal date to the time of order using a pricing index. This adjustment is to be based on the Steel Benchmark Index (www.steelbenchmarker.com) for standard plate in the region "USA, East of the Mississippi." The adjustment to the equipment price will apply index variation using the formula below:

$$NEP = PEP \frac{(NIP)}{(RIP)}$$

NEP = New Equipment Price

PEP = Proposed Equipment Price

RIP = Reference Index Price (standard plate \$/metric tonne) published price on

NIP = New Index Price (standard plate \$/metric tonne) current price

Note: At the time of preparing this proposal, the most recent 'Reference Index Price' available is \$1,783/metric tonne for 'standard plate' in the 'USA, East of the Mississippi' region and this price is dated May 22, 2023.

4.4 PRELIMINARY PROJECT SCHEDULE

The project schedule below is preliminary and warrants further discussion. Availability of materials in North America is impacting equipment lead times and fluctuating daily.

Note: schedule is based upon a one-week customer review period.

DESCRIPTION	WEEK STARTED	WEEK COMPLETED
Receipt of Order, Project Initiation	1	1
General Arrangement, PFD, PID Drawings Issued for Approval	1	8
Equipment Loading Diagrams	9	14
Electrical Drawings & Information	4	16
Purchase of Vendor Buy-Outs ¹	6	46
Fabrication of Equipment	10	46
Shipment of Equipment	44	48
Commissioning of Equipment	TBD	TBD

¹ Many buyouts including heat recovery media and components required for the PLC control system have abnormally long lead times that may extend beyond the delivery for the balance of system.

5.0 PERFORMANCE GUARANTEE AND WARRANTY

5.1 PERFORMANCE GUARANTEE

NESTEC, Inc. guarantees the proposed system will perform as follows:

VOC DESTRUCTION EFFICIENCY

- The combined performance from the oxidizer and concentrator system will reduce the concentration of gaseous phase VOCs in the oxidizer exhaust by $\geq 90\%$ or down to a lower limit of 10 ppmvd as propane (e.g., for inlet VOC concentrations below 100 ppmvd VOC, the oxidizer exhaust will be reduced to 10 ppmvd or less VOC as propane). This guarantee is based on using US EPA Test Method 25A and US EPA Test Method 3C for methane correction.

The performance guarantee is based on the following provisions:

GENERAL

- The equipment is operated in accordance with the 'Design Conditions' in Section 2.0 and the equipment operation and maintenance manual.
- Any performance guarantees not listed above are not included.
- The upstream process and emission control equipment must be operating continuously, steady state, and per manufacturers recommended operating procedures.

TESTING REQUIREMENTS

- An independent testing contractor that is mutually agreeable to the Vendor and end-user shall conduct the emission control system's performance testing using the pre-test approved protocol.
- The financial responsibility for emission control testing is by the end-user/purchaser.
- An average of three tests, each one hour in duration is required.
- Emission testing must be conducted simultaneously with measurements taken at the inlet and outlet of the supplied equipment.
- Testing locations must comply with the requirements of US EPA Method 1.

5.1 PERFORMANCE GUARANTEE - CONTINUED

TESTING REQUIREMENTS

- An independent testing contractor that is mutually agreeable to the Vendor and end-user shall conduct the emission control system's performance testing using the pre-test approved protocol.
- The financial responsibility for emission control testing is by the end-user/purchaser.
- An average of three tests, each one hour in duration is required.
- Emission testing must be conducted simultaneously with measurements taken at the inlet and outlet of the supplied equipment.
- Testing locations must comply with the requirements of US EPA Method 1.
- The guaranteed concentration(s) do not allow for correction factors (e.g., oxygen correction) unless noted in the guarantee.
- Testing shall be conducted within sixty (60) days of start-up or within six (6) months of receipt of equipment at the project site.
- Seller shall be notified at least ten (10) days in advance of the testing and shall be permitted to have a field service engineer present during engineering and compliance testing. The field service engineer shall have the opportunity to adjust the equipment prior to these tests in order to obtain optimum performance.
- The equipment shall be considered to be in compliance with the terms of the performance guarantee if Buyer does not conduct the performance test within the time frames described above.
- If the equipment, when tested, does not meet the terms of the performance guarantee as specified herein, Seller shall have a maximum of six (6) months to make whatever modifications and improvements that are necessary to meet the performance guarantee.
- If a second series of tests become necessary, they will be provided at the expense of the Seller.
- If after a second round of testing, the equipment fails to meet the terms of the performance guarantee as specified above, then Seller and Buyer shall agree on a course of action including necessary improvements.

5.2 WARRANTY

Seller warrants purchased equipment offered in this proposal shall be free of defects in materials and workmanship for a period of twelve (12) months from start-up or eighteen (18) months after delivery of equipment, whichever should occur first.

If any part of the equipment supplied is found to have a defect in material or workmanship, Seller will replace said part at no cost to Buyer. On-site labor (see rates), travel, living, and lodging expenses for installation or calibration services of said part(s) is the responsibility of the Buyer. After delivery of said part(s) and upon demand, the damaged or broken part is to be sent back to NESTEC, Inc. corporate offices for evaluation and credit that may be applicable to buyer.

The above warranties do not apply to equipment failure due to normal wear and tear, abrasion, corrosion, plugging as a result of process issues, temperature excursions or negligence in operating the equipment on the part of Buyer or Buyer's sub-contractor(s).

5.3 FIELD ENGINEER RATE SCHEDULE

If additional field engineer time is required, it will be made available and be billed at the following rates:

RATE SCHEDULE		
	FIELD SERVICE TECHNICIAN / ENGINEER	SENIOR ENGINEER
Monday – Friday	\$195/hr	\$255/hr
Weekend / Emergency	\$255/hr	\$330/hr
Holidays (New Years, Christmas, and Easter) – Travel and On-site Time	\$305/hr	\$370/hr
Travel, Living, and Lodging Expenses	Cost plus 15%	Cost plus 15%
Travel Time (Including Overnight Stays)	Straight time (\$125/hr). Maximum 8 hours each way.	

All work and travel will be performed during normal working hours (Monday thru Friday) unless arranged otherwise in advance. Work and travel performed outside of normal hours, during weekends or holidays, will be subject to a premium rate. NESTEC, Inc. rates are stated above and will apply to all NESTEC, Inc. personnel involved in the scope of work described herein (service technician, installation supervision, engineering or project management support as required, etc.). NESTEC, Inc. pricing is exclusive of any applicable taxes, duties, permits or fees associated with the work described herein.

5.4 WORK BY OTHERS

The following items are excluded from the NESTEC, Inc. scope of supply, if required:

GENERAL

- Anything not explicitly stated in the scope of supply.
- Any alteration that may be required to bring existing equipment up to new standards/codes.
- Refurbishment or cleaning of existing equipment.
- Structural engineering/evaluation of existing support structures and buildings.
- All building enclosures, lighting and sprinklers.
- Fire and explosion protection and suppression systems.
- Lower explosive limit (LEL) monitoring system.
- Supply of noise abatement equipment. The noise level of the NESTEC supplied equipment may exceed 85 dBA at a distance of 3 feet. If noise levels from the NESTEC supplied equipment or a combination of noise levels with other existing equipment exceed local code or plant requirements, NESTEC can provide sound abatement equipment at an additional cost.
- Receipt and offloading equipment at site.
- Safe and secure storage of equipment at site, including weather protection.
- Commissioning services with customer process exhaust; unless otherwise specified in the scope of supply.
- Roof penetrations, curbs, pitch-pockets, supports stand and structural modifications necessary for ductwork and other equipment installation, unless specified in the scope of supply.
- Programming, HMI screen(s) development, and software license(s) for Plant PLCs, Plant DCS, Plant SCADA and other plant control systems.
- On site participation in customer HAZOP.
- Building enclosures and HVAC systems.
- Emergency shower and eye-wash stations.
- First fill lubricants and reagents.

ELECTRICAL & UTILITIES

- Lightning protection and grounding grid requirements.
- Supply and installation of 120V, 60Hz feed to the connection point(s).
- Supply and installation of 480V, 3PH, 60Hz feed to connection point(s).
- Supply of motor control center(s) and motor starter panels.
- Supply of variable frequency drive(s).
- Communication wiring connection(s) to existing control system(s).
- Natural gas supply at 10.0 psig (min) feed to the connection point(s).
- Supply of compressed air with minimum 90 psig at - 40°F dew point feed to the connection point(s).
- Equipment area lighting and convenience/maintenance receptacles.
- Field mounted/local electrical disconnects.
- Supply of all conduit and wiring for remote Ethernet or cable connections to existing SCADA or building maintenance system, remote HMI, or controls location.

5.4 WORK BY OTHERS - CONTINUED

CIVIL

- Foundation design, soil samples, site survey(s) and underground survey(s).
- Civil work, excavation, concrete foundations, slabs on grade, embedded steel, embedded anchor bolts, and grouting.
- Underground utilities and piping.

INSTALLATION

- Mechanical installation services, materials, labor, per diem and equipment rentals unless stated within the proposal.
- Electrical installation services, materials (e.g. cable tray, conduit, wire, cables, supports/unistrut) labor, labeling, terminations, per diem and equipment rentals unless stated within the proposal.
- Adequate lay down area for off-loading and storage of equipment within 100 feet of equipment installation location.
- Temporary lighting and power.
- Union contractors for installation services (all labor is non-union).
- Dumpsters for disposal of waste materials including metal, construction debris and scrap materials.
- Demolition of existing equipment.
- Field touch up painting.
- Confined space and fire watch attendants and dedicated safety supervisor.
- Supply of washroom facilities, breakroom area and office space.

INSULATION

- External cladding and insulation requirements, unless specified in the scope of supply.
- Insulation for personnel protection, unless specified in the scope of supply.
- Insulation and heat tracing for cold weather/freezing protection, unless specified in the scope of supply.

DUCTWORK & DAMPERS

- Dampers and damper actuators not specified in the scope of supply.
- Ductwork not specified in the scope of supply.
- Access doors and platforms not specified in the scope of supply.

TESTING

- Performance guarantee testing and/or compliance testing by independent third party.
- Customer specific FAT testing.
- On site acceptance testing.

PERMITS & TAXES

- All county, city, and special rate taxes; customers, tariffs, VAT, and duty charges.
- All local, state and/or federal permits.
- City, State, Province and Country specific PE stamps/certifications.

6.0 NESTEC STANDARD TERMS & CONDITIONS

1. Term of Proposal/Contract. Unless otherwise provided, this Proposal is subject to acceptance by Buyer within sixty (60) days from the Proposal date. The BUYER is limited to a three-year period for bringing actions upon any section of these Terms and Conditions within this contract. The Terms and Conditions within this contract shall otherwise be governed by and construed according to the laws of the State of Pennsylvania.
2. Proprietary & Confidential Materials. A. All drawings, patterns, specifications and information included in Seller's Proposal or Contract, and all other information otherwise supplied by Seller as to design, manufacture, erection, operation and maintenance of the equipment, shall be the proprietary and confidential property of Seller and shall be returned to Seller at its request. Buyer shall have no rights in Seller's proprietary and confidential property and shall not disclose such proprietary and confidential property to others or allow others to use such property, except as required for the Buyer to obtain service, maintenance, and installation for the equipment purchased from the Seller. Specifically, Buyer agrees that no drawings, specifications or information included in Seller's Proposal or Contract shall be used by Buyer for competitive bidding or similar purposes without Seller's consent and Buyer shall not reproduce or build assemblies or process systems per Seller's design drawings without explicit approval by Seller. B. Buyer shall hold in confidence and shall not disclose, divulge, or publish to any person, or use or copy any trade secret, process, record, plan, projection, information pertaining to customers or prospective customers, financial information, marketing strategies, or any other confidential or proprietary information of Seller (including the terms and conditions of this Contract or any other agreement between Buyer or Seller) acquired or in connection herewith, or disclosed or transmitted by Seller or any of its agents, employees, or affiliates, except as authorized in writing by Seller, and Buyer shall keep, and shall require its officers, directors, employees, and agents to keep such information confidential. C. This clause shall survive the termination of this Contract and be in effect as long as Buyer has possession of any of Seller's proprietary or confidential information.
3. Taxes, Permits, Licenses and Bonds. Unless otherwise provided, any tax or import duty imposed by any federal, state, local or municipal Authority arising out of either the sale, manufacture or installation of the equipment or performance covered by this Contract, is not included in the price as quoted in the Proposal, and will be made an additional charge to be paid by Buyer. All building, erection or other licenses or permits necessary or related to the work, shall be secured and paid for by the Buyer; and should the Seller be required to furnish any bond or bonds on account of the execution or fulfillment of this Contract, the cost shall be added to the quoted price.
4. Delivery. Unless otherwise provided, all shipments of materials and equipment shall be made Seller F.O.B. destination. Title and risk of damage to or loss of goods shall pass to Buyer upon delivery by Seller to the carrier. Seller assumes no responsibility for loss or damage to the equipment or machinery after delivery to carrier. No claim will be allowed unless made by Buyer within 7 days from receipt of shipment. This Contract is based on current freight rates and the price is subject to adjustment in the event that a change in such rates affects Seller's cost of performance hereunder. Prices quoted are for furnishing and shipping complete, or in accordance with the delivery schedule specified, the quality or quantities listed for each item. Should shipping releases or schedules be changed for any reason beyond Seller's control, Seller reserves the right to invoice according to quantities or equipment shipped. If Buyer declines or is unable to take delivery at the time(s) specified in the proposal or contract, Seller will have the equipment stored for Buyer at Buyer's risk and account, and the materials shall be considered "shipped." Buyer shall pay storage, handling and re-handling charges and continue to make payments according to the payment terms contained herein.
5. Price Adjustment. All shipping dates are approximate, based on prompt receipt by Seller of all necessary information and are subject to change by reason of conditions beyond Seller's reasonable control as stated in Article 17. Should Buyer request delay in shipment of the equipment, or after shipment the installation thereof is delayed by Buyer or for any cause beyond Seller's reasonable control, the entire purchase price, less the amount estimated for installation, or any incomplete part thereof or the price of any other incomplete work, shall be due and payable within 30 days after shipment, or if not shipped, 30 days from the date the equipment is ready for shipment. In the event Buyer requires Seller to delay engineering, fabrication, shipment, installation, or start-up of the equipment and/or machinery under this Contract, Seller shall be entitled to full reimbursement for all costs incurred as a result of such delay.
6. Installation. In the event installation work is a part of this Contract, the equipment and/or machinery shall be assembled, erected and installed under the personal direction of an employee or the agent of the Seller. Buyer shall furnish sufficient electricity, water, air, light, heat, sanitary facilities, and fire protection as well as adequate all-weather storage space, ingress and egress to job site and other items that may be listed under Buyer's responsibilities. The site is to be prepared for installation personnel to work in a normal fashion with no extra equipment or procedures required due to construction or production interferences. Unless otherwise

stated, installation shall be performed only during Seller's normal working hours and any overtime work required for any reason shall be requested by and paid for by Buyer.

7. Changes and Differing Conditions. A. In the event there are changes requested by Buyer, or changes in site conditions or installation requirements subsequent to issuance of the Purchase Order, the parties shall renegotiate the price quoted herein to reflect all expenses caused by said changes. B. Buyer, by written order accepted by Seller, may make reasonable changes in the scope of work subject to equitable adjustments in the Contract price and schedule, including an allowance for increased overhead and profit. Seller is not obligated to incur any expense or do any work in excess of that reasonably anticipated unless Buyer issues a written order for such expense and work with mutually acceptable terms and conditions. C. Seller reserves the right to make changes, subject to Buyer's approval, in design or material which in Seller's judgment are for improvement in the equipment and/or its operation. D. In the event Seller is installing equipment and any site conditions or installation requirements at the time of erection differ materially from those evident at the time of Seller's pre-bid site visit, Buyer's representations, and conditions ordinary to similar projects, then any additional costs caused by the differing site conditions or installation requirements shall be subject to equitable adjustment to the Contract price and schedule. E. In the event activities or operations at the site by parties other than Seller interfere with the execution of the work, an equitable adjustment shall be made to the Contract price and schedule.
8. Safety Devices. Seller will supply such safety devices or fire protection equipment as is specified in the Proposal. If Buyer desires or requires through local, state, or insurance underwriter's specifications or regulations, other additional safety devices or equipment, Seller will undertake, without being obligated therefore, to furnish same at Buyer's cost.
9. Material/Workmanship Warranty. Seller warrants that all new equipment and machinery which it manufactures and furnishes and work provided will be free from defects in materials and workmanship for a period of twelve (12) months after the first item is shipped. Seller's sole obligation hereunder is to repair or replace, at Seller's option, any part or component which, after Seller's inspection, proves to be defective. This warranty does not apply to consumable, replaceable parts or components normally subject to wear and replacement.

Seller's obligations hereunder are subject to the following conditions:

- a. *Receipt from Buyer of immediate written notice of any defect containing a full description thereof.*
 - b. *Buyer shall not without Seller's approval have attempted to correct the defect.*
 - c. *Buyer shall have installed (if applicable), operated and maintained the equipment strictly in accordance with Seller's operating and maintenance instructions, including, but not limited to, the use of only those materials specified in the Proposal and in the inlet quantities stated in the Proposal.*
 - d. *The defect has been caused solely by faulty materials or workmanship for which Seller is responsible, and is not due to such things as erosion, corrosion, or deterioration resulting from the manner in which the equipment is operated, accident (including damage during shipment), neglect, misuse or abuse, or exposure to conditions beyond the environmental power or operating constraints specified by Seller.*
 - e. *To the extent that the materials and equipment furnished consist of products manufactured by other parties, such manufacturer's warranty is hereby assigned to Buyer, and Seller's responsibility with respect to any such products shall not extend beyond the manufacturer's warranty with respect thereto. It is understood that Seller's warranty with respect to such products is limited to repair or replacement at Seller's option and does not include labor, costs to repair or replace components, or travel, living, and lodging expenses, unless specifically provided otherwise.*
10. Patent Warranty. Seller shall defend at its expense any suit or proceeding brought against Buyer based on any claim that the equipment covered herein, except for equipment or material manufactured or designed to Buyer's specifications, infringes any U.S. patent issued as of the date of this Proposal, and pay any court imposed damages and costs finally awarded against Buyer, but not to exceed the amount theretofore paid to Seller by Buyer hereunder provided: a) Seller is promptly notified by Buyer in writing of such claim; and b) Seller is given full authority, information, & assistance by Buyer which Seller deems necessary for the tests (if applicable) in accordance w/applicable standard procedures as specified in the proposal & in conduct of such defense.

Seller shall have the right and option at any time in order to avoid such claims or actions and minimize potential liability to: a) procure for the Buyer the right to use the equipment; or b) modify the equipment so that it no longer infringes; or c) replace the equipment with non-infringing equipment.

11. Performance Guarantee. Seller's sole guarantees are those contained in its Proposal to Buyer. These guarantees are contingent upon the correctness & accuracy of the information provided by Buyer & are based upon the operating conditions specified in Seller's Proposal & operation & maintenance by properly trained personnel. These guarantees will be deemed satisfied by successful completion of performance effect on the date of this proposal. Performance tests shall be conducted by the Buyer, (unless otherwise specified in Seller's proposal), & witnessed by Seller, at its option, w/in ninety (90) days of initial operation of the equipment. In the event the said tests are not conducted within ninety (90) days of initial operation or within six (6) months of shipment, whichever is earlier, & through no fault of Seller, the equipment shall be deemed accepted by the Buyer and in compliance with all contractual requirements. Seller makes no warranty whatsoever as to the inclusion of the equipment supplied by Seller into Buyer's process (if applicable), Seller's warranty being limited solely to the performance of its equipment in accordance w/the specifications therefore. In the event the equipment fails to meet the Contract performance guarantees, Seller will supply at its sole option, repaired or replacement parts pursuant to the delivery terms of the Proposal subject to the limitations stated in Article 15.
12. IMPLIED WARRANTIES/GUARANTIES DISCLAIMER. THE WARRANTIES AND GUARANTIES FURNISHED BY SELLER, AS EXPRESSLY INCLUDED HEREIN, CONSTITUTE THE SELLER'S SOLE OBLIGATION HEREUNDER AND ARE IN LIEU OF ANY OTHER WARRANTIES OR GUARANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.
13. Disclaimer of Consequential Damages. Seller, its subsidiaries, affiliates, agents, or employees shall not be liable to Buyer for incidental, indirect, special, liquidated or consequential damages, including, but not limited to, loss of profits or revenue, loss of use of equipment, costs of replacement or substitute goods or product, costs of capital, additional expenses incurred in the use of equipment or facilities, or claims of third parties. This disclaimer shall apply to consequential damages based upon any cause of action whatsoever asserted against Seller, including one arising out of any breach of warranty, express or implied; guarantee; products liability, negligence; tort; or any other theory of liability.
14. Indemnification by Buyer. Buyer shall indemnify Seller for, & hold Seller harm-less from, all costs & expenses incurred by Seller, including, without limitation, costs of investigation, attorney's fees, & amounts paid in settlement or satisfaction of claims, proceedings, or judgments, in connection w/all claims & proceedings against Seller based upon claimed defects in design in any equipment or material manufactured for Buyer by Seller to Buyer's specifications or design.
15. Limitation of Liability. In no event will Seller's liability to the Buyer for any and all claims, including property damage and personal injury claims, allegedly resulting from breach of contract, tort, or any other theory of liability exceed the amount of the initial purchase price paid to Seller by Buyer.
16. Buyer's Negligence and Insurance. Seller shall not be responsible for losses or damages arising out of the negligence of the Buyer, its employees, agents or architects or those of third parties whom Seller is not responsible, or losses for which the Buyer has agreed to provide insurance. In the event that both Seller and the Buyer are negligent and the negligence of both is approximate cause of the accident, then in such event each party will be responsible for its portion of the liability or damages (excluding consequential or indirect damages which are disclaimed by Seller) resulting there from equal to such party's comparative share of the total negligence.
17. Delays and Damages - Force Majeure. A. In the event of delays in the performance of the obligations hereunder or damages due to conditions beyond Seller's reasonable control, including, but not limited to acts of God, acts of Buyer, or Buyer's customer or of other contractors employed by Buyer, acts of civil or military authority, governmental restrictions, prohibitions and regulations, priorities, fire, storms, strikes, floods, epidemics, quarantine restrictions, war, riot, delays in transportation, car shortages, or Buyer's inability to obtain necessary labor, materials, or manufacturing facilities, the Contract dates shall be extended by an equitable period of time and Seller shall be entitled to an equitable adjustment in the Contract price. B. Acceptance of the equipment by Buyer shall constitute a waiver of all claims for damages. C. Seller's shipping dates are approximate. Seller will not be responsible for loss or damage arising from delays caused by lack of correct or complete dates from Buyer. D. This Section shall in no event be construed to relieve Buyer from the obligation to pay for goods shipped by Seller.
18. Cancellations. In the event of any cancellation by Buyer for any reason at any time after Seller has received a purchase order (or other authorization) for any equipment, parts, or services or any combination thereof, Buyer shall pay to Seller within 30 days of such cancellation, all contract costs and other expenses incurred by Seller prior to receipt of the request for cancellation (including, but not limited to, engineering expenses, and overhead, costs of expended material, direct labor with factory burden, and all commitments to Seller's suppliers, subcontractors and others), plus cancellation charges of 20% of the Contract price to cover general and administrative expenses plus 10% of the Contract price to cover profit lost by reason of cancellation.

19. **OSHA – Federal, State, & Local.** Seller agrees to comply with the Federal OSHA requirements in effect as of the date of this proposal relative to the work performed hereunder. Seller’s sole responsibility is limited to modification or replacement of the equipment cited as violating such standards. OSHA requirements with respect to noise are specifically excluded. Where state, local or Buyer’s health & safety requirements differ from the Federal OSHA requirements, modifications or changes in design to meet such requirements will be incorporated at Buyer’s request. Additional costs arising from such requests & from erection procedures required by state, local or Buyer’s health & safety regulations which deviate from Federal OSHA requirements will be for Buyers’ acct.
20. **Hazardous Materials.** *If the Buyer’s facilities contain hazardous materials, including asbestos bearing materials and any such materials are encountered, Seller shall have no obligation to remove or remediate them in the absence of a separate agreement that includes separate consideration to Seller for such work. If Seller or any of its subcontractors is required to perform work within or immediately adjacent to any facilities that are determined to contain hazardous materials and/or asbestos, and the said work must be interrupted to allow for the remediation or removal of such materials by others, Seller shall be entitled to any and all costs & other expenses associated with such interruption in work. Buyer shall fully defend, hold harmless and indemnify Seller & its agents from & against any claim arising out of exposure to such hazardous &/or asbestos bearing materials.*
21. **Credit and Payment.** A. Unless otherwise agreed, payment shall be as outlined in the Proposal and payments shall be made in current funds of the U.S. at par within 30 days of presentation of an invoice. Payments not received by the due date shall be subject to a monthly interest charge at the rate of 2% per month or the maximum amount allowed by law, whichever is less, due and payable until the payment is received. B. Buyer shall also pay all collection costs of Seller on any delinquent amounts including but not limited to court costs and attorney fees. In the event that Seller in its sole and absolute discretion, shall deem Buyer’s financial condition to be unsatisfactory, Seller shall have the right to (a) limit the amount of credit that Seller may extend to Buyer for the purpose of goods hereunder, and delay manufacture or shipment of Buyer’s orders based upon said limitations; (b) require full or partial payment in advance; (c) ship goods to Buyer C.O.D., or require payment to be secured by letters of credit; (d) require written guarantees of payment satisfactory to Seller; or (e) cancel or refuse to accept or fill any order from Buyer then outstanding or thereafter placed.
- 21.1 Default in Payment.** A. *If any payment due Seller is more than 30 days past due, Seller shall have the right at its sole option to accelerate the payment of all outstanding amounts, including, but not limited to, amounts previously retained pursuant to the Contract, by notifying Buyer in writing that all outstanding amounts are immediately due and presenting Buyer with an invoice for said amount. Seller shall also have the right in such event to discontinue all work on the project without incurring any liability to Buyer for such action.* B. *In the event the total aggregate amount of delinquent payments exceeds at any point during the term of the agreement ten (10%) percent of the total contract amount, Buyer shall provide at Seller’s request, additional collateral including but not limited to irrevocable letters of credit, sufficient to secure payment of all contract amounts.* C. *The foregoing remedies of Seller are in addition to all other remedies Seller may have at law or in equity, including but not limited to the right to obtain liens on Buyer’s assets through legal or equitable proceedings.*
- 21.2 Security Agreements.**A. *Buyer hereby grants to Seller a security interest in the equipment or materials sold hereunder to secure the purchase price of same. Buyer shall execute any financing or other statements or filings which in Seller’s sole judgment are necessary or appropriate to evidence or perfect such security interest, which shall thereafter be filed by Buyer with the appropriate recording officer. This Contract shall constitute the security agreement between the parties and is intended to and shall afford the Seller all rights of a secured party under Article 9 of the Uniform Commercial Code.* B. *Until Buyer has paid the full amount due and owing for any equipment or materials purchased hereunder, Buyer shall be prohibited from transferring such equipment or materials to any creditor of Buyer other than Seller, unless Seller provides its prior written consent to such transfer, such consent not to be unreasonably withheld.* C. *In the event Buyer becomes insolvent, files for bankruptcy, or goes into receivership or liquidation, Buyer agrees to use its best efforts and to provide all assistance requested by Seller in order to secure Seller’s position as a preferred creditor with respect to all amounts due to Seller.*
- 21.3 Payment of Retained Amounts.**A. *If this Contract permits Buyer to withhold final payment, and acceptance is not based upon performance tests, such final payments shall be due and payable within 30 days after the equipment is ready for operation.* B. *If such deferred payment is contingent upon tests and such tests are delayed through no fault of Seller for more than 30 days after the equipment is first ready for operation, final payment shall be due and payable upon expiration of such 30-day period.*
22. **Other Contractors.** Seller shall not have any duty or authority to direct, supervise or oversee any contractors of Buyer of their work or to provide the means, methods or sequence of their work or to stop their work. Seller’s services and/or presence at a site shall not relieve others of their responsibility to Buyer or to others. Seller shall not be liable for the failure of Buyer’s contractors or others to

fulfill their responsibilities, and Buyer agrees to indemnify, hold harmless and defend Seller against any claims arising out of such failures.

23. **Escalation.** Seller and Buyer will agree on a fair and equitable escalation arrangement to compensate for uncontrollable inflation factors in the event the Contract exceeds the time frame contemplated by the parties.
24. **Assignment/Subcontracts.** This Contract shall be binding upon and inure to the benefit of the parties, their successors, and assigns provided that Buyer may not assign the Contract without prior written consent of Seller. Seller may subcontract any portion of the work.
25. **Disputes.** In the event of a dispute arising hereunder, the parties will confer & attempt to amicably resolve the dispute. If after good faith negotiation, the parties cannot reach agreement, then the matter will be finally resolved in any court having jurisdiction.
26. **Contract Interpretation.** If any of the provisions of these General Terms and Conditions of Sale (including statements made in the Proposal) conflict with any provisions in Buyer's documents, the former shall govern unless Seller expressly agrees to the contrary in writing. Any contract resulting from this Proposal shall be construed in accordance with the laws of the State of Pennsylvania. All communications written and verbal, between the parties hereto with reference to the subject of this Proposal prior to the date of its acceptance are merged herein, and this Proposal, when duly accepted and approved, shall constitute the sole and entire agreement and Contract between the parties as to the subject matter thereof. No change in or modifications of said Contract shall be binding upon the parties or either of them, unless the changes or modifications shall be duly accepted in writing by the Buyer and approved in writing by Seller.
27. **Severability.** Should any part of this Contract be declared invalid or unenforceable, such decision shall not invalidate the remaining provisions of this Contract.
28. **Events of Default.** The occurrence of any one or more of the following events shall constitute an event of default (each an "Event of Default") hereunder:
- 28.1 **Nonpayment of any Payment Milestone.** Failure by Buyer to pay any installment of the Payment Milestone or any other amount, reimbursement or sum due and payable hereunder, upon the date when said payment is due.
- 28.2 **Certain Obligations.** Failure by Buyer to perform, observe or comply with any non-monetary obligation contained in these Terms and Conditions after ten (10) days written notice by Seller.
- 28.3 **Assignment; Receivership; Attachment.** (a) The making by Buyer of any arrangement or assignment for the benefit of creditors; (b) the appointment of a trustee or receiver to take possession of substantially all of Buyer's assets located at job site of Buyer's interest in the equipment hereunder, where possession is not restored to Buyer within thirty (30) days; or (iii) the attachment, execution, or other judicial seizure of substantially all of Buyer's assets located at job site of Buyer's interest in the equipment herein, where such seizure is not discharged within thirty (30) days.
- 28.4 **Bankruptcy.** The admission by Buyer in writing of its inability to pay its debts as they become due, the filing by Buyer of a petition in bankruptcy seeking any reorganization, arrangement, composition, readjustment, liquidation, dissolution or similar relief under any present or future statute, law or regulation, the filing by Buyer of an answer admitting or failing timely to contest a material allegation of a petition filed against Buyer in any such proceeding or, if within forty-five (45) days after the commencement of any proceeding against Buyer seeking any involuntary reorganization, or arrangement, composition, readjustment, liquidation, dissolution or similar relief under any present or future statute, law or regulation by any of Buyer's creditors such proceeding shall not have been dismissed.
29. **Remedies.** If an Event of Default occurs, Seller shall have the following rights and remedies, in addition to any and all other rights or remedies available to Seller in law or equity:
- 29.1 **Recovery of Milestone Payment(s) and Damages.** Seller shall have the right to recover from Buyer all loss that Seller may incur by reason of termination of the Agreement, including, without limitation: (a) all Milestone Payment(s) and other sums due and payable by Buyer as of the date of Event of Default; (b) all Milestone Payment(s) that would otherwise be payable for the remainder of this Agreement in accordance with the terms of this Agreement; (c) the costs of collecting amounts due from Buyer under the Agreement (including attorney's fees and litigation costs); (d) interest in the amount of 1% per month on the all amounts due from the Event of Default until judgment or payment, whichever is later, (e) the costs of curing Buyer's defaults existing at or prior to the date of termination; and (f) all Seller's other reasonable expenditures arising from the default . Buyer shall reimburse Seller for all such items, and the same shall be due and payable immediately

from time to time upon notice from Seller that an expense has been incurred, without regard to whether the expense was incurred before or after the termination.

30. **Claims in Bankruptcy.** Nothing herein shall limit or prejudice the right of Seller to prove and obtain in proceeding for bankruptcy, insolvency, arrangement or reorganization by reason of the termination of this Agreement, an amount equal to the maximum allowed by any statute or rule of law in effect at the time when, and governing the proceedings in which, the damages are to be proved, whether or not the amount is greater, equal to or less than the amount of the loss or damage that Seller has suffered.
31. **Manner of Notice.**
- 31.1 **Notices; Addresses.** All notices, demands and other communications ("**notices**") permitted or required to be given under this Agreement shall be in writing and sent by personal service, telecopy transmission (if a copy thereof is also sent on the same day by a nationally recognized overnight courier service), certified mail (postage prepaid) return receipt requested or by a nationally recognized overnight courier service to the following addresses or to such other address as either Seller or Buyer may designate as its new address for such purpose by notice given to the other.
32. **Authority.** If Buyer signs as a corporation, limited liability company, or a partnership, or other business entity each person executing this Agreement on behalf of Buyer hereby covenants and warrants that Buyer is a duly authorized and existing entity, that Buyer is duly qualified to do business in Buyer, that Buyer has full right and authority to enter into this Agreement, and that each person signing on behalf of Buyer is duly authorized to do so and that no other signatures are necessary. Upon Seller's request, Buyer shall provide Seller with evidence reasonably satisfactory to Seller confirming the foregoing covenants and warranties.
33. **Interpretation.** The words "Seller" and "Buyer" as used herein shall include the plural as well as the singular. The words used in neuter gender include the masculine and feminine. If there is more than one Buyer, the obligations under this Agreement imposed on Buyer shall be joint and several. The captions preceding the articles of this Agreement have been inserted solely as a matter of convenience and such captions in no way define or limit the scope or intent of any provision of this Agreement. This Agreement may be executed in several counterparts and by each party on a separate counterpart, each of which, when so executed and delivered, shall be an original and all of which together shall constitute one instrument.
34. **Modifications.** Neither this Agreement nor any term or provision hereof may be changed, waived, discharged or terminated orally, and no breach thereof shall be waived, altered or modified, except by a written instrument signed by the party against which the enforcement of the change, waiver, discharge or termination is sought.
35. **Severability.** If any provision of this Agreement or the application thereof to any person or circumstance shall, to any extent, be invalid or unenforceable, the remainder of this Agreement, or the application of such provision to persons or circumstances other than those as to which it is invalid or unenforceable, shall not be affected thereby, and each provision of this Agreement shall be valid and enforceable to the full extent permitted by law.
36. **Entire Agreement.** This Agreement, including the Exhibits hereto, which are made part of this Agreement, contain the entire agreement of the parties and all prior negotiations and agreements are merged herein. Neither Seller nor Seller's agents have made any representations or warranties with respect to this Agreement or the subject thereto except as expressly set forth herein, and no rights are or shall be acquired by Buyer by implication or otherwise unless expressly set forth herein.
37. **Remedies Cumulative; No Waiver.** No remedy or election hereunder shall be deemed exclusive, but shall wherever possible, be cumulative with all other remedies at law or in equity. No waiver of any provision hereof shall be deemed a waiver of any other provision hereof or of any subsequent breach of the same or any other provision. No waiver of any breach shall affect or alter this Agreement, but each and every term, covenant and condition of this Agreement shall continue in full force and effect with respect to any other then existing or subsequent breach thereof. No reference to any specific right or remedy shall preclude the exercise of any other right or remedy permitted hereunder or that may be available at law or in equity. No failure by Seller to insist upon the strict performance of any agreement, term, covenant or condition hereof, or to exercise any right or remedy consequent upon a breach thereof, and no acceptance of full or partial rent during the continuance of any such breach, shall constitute a waiver of any such breach, agreement, term, covenant or condition.
38. **Time of Essence.** **TIME IS OF THE ESSENCE** with respect to the due performance of the terms, covenants and conditions herein contained; provided, however, that no delay or failure to enforce any of the provisions herein contained and no conduct or statement shall waive or affect any of Seller's rights hereunder.

39. **Governing Law and Jurisdiction.** The Parties agree that this Agreement shall be deemed to have been made and entered into in Montgomery County, Pennsylvania and that the law of the Commonwealth of Pennsylvania shall govern this Agreement, without regard to conflict of laws principles. Jurisdiction and venue are exclusively limited to any court geographically located in Montgomery County, Pennsylvania. The parties hereby waive any objections to the jurisdiction and venue of the courts in or for Montgomery County, Pennsylvania, including any objection to personal jurisdiction, venue, and/or forum non-conveniens, in any proceeding by either party to enforce its rights hereunder filed in or for Montgomery County, Pennsylvania. This Agreement and the rights and obligations of the parties hereunder shall be construed and enforced in accordance with the laws of the Commonwealth of Pennsylvania.



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**Budgetary Proposal for an RCS (Rotary Concentrator System) and TRITON
(Regenerative Thermal Oxidizer) Abatement System**

Proposal Number 23-9162 R0

Presented To:

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Consultant
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For:

Fiberglass Tank Production Emissions

Prepared By:

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June 1, 2023

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Revision History

- Revision 0 – Initial budgetary proposal submitted based on provided information for the process parameters, a 116,373 SCFM rotary concentrator and a 6,000 SCCFM RTO, submitted 6/1/2023.

Project Background

Catalytic Products International (CPI) is pleased to submit the following budgetary proposal to Trinity for an abatement system to control volatile organic compound emissions from fiberglass tank production.

Exhaust Characteristics

Process conditions presented to CPI and assumed include:

Flow Rate	SCFM	116,373
Exhaust Temperature	°F	60 – 80
VOC Type		Paint solvents TBD
VOC Loading – Assumed	lb/hr	Styrene, MEK, Toluene and Acetone
VOC Loading	#/h	3.6 – 34

Plant Information

Plant Location		Exton, PA
Plant Elevation - Assumed	Feet ASL	312
Process		Sprayed up and laid up fiberglass
Ambient Temperature Range - Average	°F	25 – 85
Design Wind Velocity - Assumed	mph	80
Seismic Parameters		TBD
Electrical Area Classification		Unclassified
Equipment Location		Outdoors at grade

Basis of Design

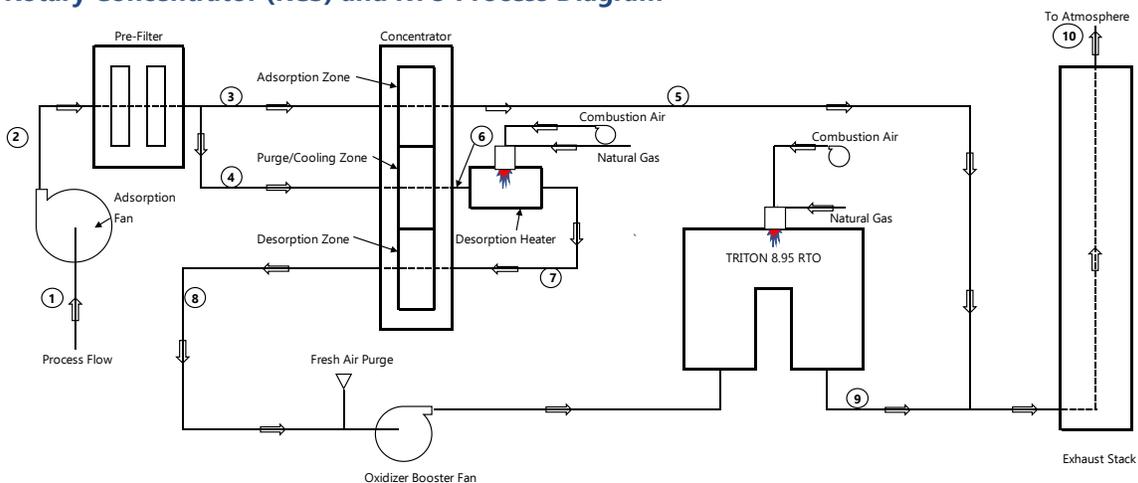
Based on the process conditions provided Catalytic Products International (CPI) has provided a rotary concentrator system (RCS) with a regenerative thermal oxidizer (RTO) to control the VOC emissions from the booths as described in this proposal. This recommendation is based on the high air volume and anticipated relatively low VOC concentration of the VOC from the paint applied. This type of system concentrates the VOCs with a Zeolite wheel, and then destroys those concentrated emissions in a significantly smaller RTO than would be used for this this air volume, thereby reducing operating cost.



RCS 116 (Rotary Concentrator System) Specifications (116,373 SCFM)



Rotary Concentrator (RCS) and RTO Process Diagram



RCS Zeolite Concentrator System

- One (1) pre-filter housing with filters and Siemens transmitter to measure filter pressure drop.
- One (1) RCS-116 rotary concentrator system, comprised of one (1) concentrator units, each with high-performance hydrophobic Zeolite adsorbent, rated for a total flow of 116,373 SCFM with 96% removal efficiency. The concentrator will ship in two sections for field assembly by others.
- One (1) adsorption forced draft blower, rated for 116,373 SCFM with expansion joints and VFD
- One (1) desorption heater to pre-heat the desorption air.
- One Access Combustion, or equal, nozzle mix gas burner and gas train.
- One (1) fresh air damper
- One (1) skid frame with the filter boxes and burner box; and ductwork all mounted to and pre-wired and pre-piped to the greatest extent possible. Painted charcoal gray epoxy paint.
- The ductwork between the filter box/concentrator wheel; concentrator wheel/main induced draft fan; desorb blower/burner box; burner box/concentrator wheel box are all included and will be shipped loose for sections not shop assembled for field installation by others.
- One (1) common clean air exhaust stack for the RCS and RTO exhaust
- Required instrumentation



Rotary Concentrator System (RCS-116) Specifications



Rotary Concentrator System		RCS-116
Quantity of RCS Concentrators		1
Adsorbent Type		High performance hydrophobic Zeolite
Adsorbent Structure		Honeycomb
Adsorbent Rotor Diameter	feet	14.76
Adsorbent Rotor Depth	inches	15.75
Adsorbent Rotor Speed	RPH	6
Concentration Ratio		20:1
Desorption Temperature	°F	428
Burner, or equal		Access Combustion
Burner Quantity		1
Burner Capacity – Installed	MMBtu/h	2.0
Quantity of Desorption Fans – per RCS		1
Adsorption Fan – Arrangement		8
Adsorption Fan	HP	500
Adsorption Fan VFD		Siemens G120X
Adsorbent Rotor Drive Motor	HP	0.5
Adsorbent Rotor Drive VFD		Siemens G120X
Ductwork Pressure Drop – assumed	"wc	2
VOC Removal Efficiency	%	96



Regenerative Thermal Oxidizer (RTO) 6,000 SCFM

- TRITON 6.95 Regenerative Thermal Oxidizer System
 - 4:1 volumetric turndown
 - +98% VOC destruction throughout operating range
- Even-Flo manifolds with (2) Double Acting Posi-Seal Valves
 - Pneumatically actuated Posi-Seal valves
 - Compressed air holding tank with pre-piped and wired air train to all actuators
- Primary Heat Exchanger Media
 - 95% thermal efficiency
 - Structured Media System
 - Cold Face Support Grid for low pressure drop
- Single-vessel housing: 2-regenerator construction
 - Carbon steel shell with structural reinforcement for vibration free operation
 - Internally insulated with 6-inches of high-quality ceramic modules
- Desorption/Oxidizer Forced Draft Booster Fan with inverter duty rated TEFC motor
- One (1) mounted and piped Access Combustion, or equal, natural gas nozzle mix burner
 - Combustion air blower with TEFC motor
 - NFPA 86 & FM Global natural gas train supplied in weather-proof enclosure
- Fresh air purge/idle/dilution air damper – located prior to desorption heater
 - Painted carbon steel construction
 - 4-20 mA modulating electric direct drive
 - Personnel protection on weather-head inlet
- TSS Control Panel for the RCS and RTO
 - NEMA 12 Enclosure mounted indoors near the RTO
 - 460 VAC main disconnect
 - 110 VAC control voltage transformer
 - Allen Bradley CompactLogix PLC with Ethernet capabilities
 - Allen Bradley PanelView Plus 7 12" HMI providing PID loop control, start-stop-reset, first fault annunciation, and alarm history
 - Remote Service Access via VPN internet broadband web port with integral Ethernet switch
 - Siemens G120X Series Variable Frequency Drive for automatic volume control of the desorption/ oxidizer fan motor mounted in the main enclosure
 - High temperature limit shut off
 - Single-pen digital temperature recorder with time and date annunciation
 - System alarm horn
 - Shop bench tested to prove operational and eliminate site troubleshooting
- Interconnecting ductwork from the desorption outlet of the concentrator to the RTO inlet fan and from the RTO discharge to the common stack
- One (1) common RCS and oxidizer exhaust stack
 - Carbon steel base rings primed and painted with grey epoxy
 - Two (2) 3" diameter test ports located 90 degrees apart
 - Test platform with access ladder with fall arrest



TRITON Regenerative Thermal Oxidizer (RTO) 6.95 Specifications (6,000 SCFM)



TRITON RTO Model		TRITON 6.95
Operating Temperature – normal	°F	1,600
Operating Temperature – maximum	°F	2,000
Residence Time	sec	>0.5
Heat Exchanger Effectiveness – (TER)	%	95
Heat Exchanger		High temperature ceramic structured media
RTO Destruction Efficiency (DRE)	%	98
Insulation – Type		Ceramic Fiber
Insulation – Thickness	"	6
Insulation – Density	lb/ft3	10
Materials of Construction		
Fresh Air Purge/Idle/Dilution Air Damper		A36 steel
Housing – Media Chamber		A36 steel
Housing – Combustion Chamber		A36 steel
Housing Structural – Media Chamber		A36 steel
Housing Structural – Combustion Chamber		A36 steel
Media Chamber Base Frame		A36 steel

Poppet Housing		A36 steel
Poppet Base Frame		A36 steel
Poppet Valve Support Structural		A36 steel
Poppet Valve Discs		A36 steel
Cold Face Support		A36 steel
Cold Face Expanded Metal		A36 steel
Forced Draft Fan Housing		A36 steel
Forced Draft Fan Structural		A36 steel
Exhaust Stack		A36 steel
Exhaust Stack Structural		A36 steel
Burner		Access Combustion, or equal
Burner Size		0.88
Burner Quantity		1
Desorption/FD Draft Booster Fan - Arrangement		1
Forced Draft Booster Fan	hp	40
VFD for RTO Booster Fan Volume Control		Siemens G120X
Common Exhaust Stack – Diameter at Discharge	Inches	84
Common Exhaust Stack – Height at Discharge	Feet	45

Abatement System (RCS and RTO)

Total System DRE	%	94
------------------	---	----

Equipment Start-up and Commissioning

Complete start-up and operator training can be provided and will include two non-union service technicians, for 80 hours of site time (M-F) to commission and train employees in the operation of this system. The startup normally begins after the customer has confirmed readiness by filling out our supplied startup checklist that includes such things as; the gas supply is ready, electrical components have all been wired correctly, ductwork is complete and production conditions exist. Our technicians will perform the following steps:

- Confirm operation of all safeties
- Establish oxidizer readiness and startup on fresh air
- Balance the air volumes and flows from the source to the equipment
- Set all the system field components
- Set all the oxidizer adjustments on production conditions
- Record pressures and volumes for insertion into the operation manual
- Verify operation via mutual acceptance of performance by both parties
- Train all necessary personnel. Training normally requires a few hours (per shift)

Budgetary Equipment Price

Rotary Concentrator System (RCS-116) + Regenerative Thermal Oxidizer (TRITON 6.95)

RCS-116 and TRITON 6.95 RTO..... \$ 1,979,700.00
 Equipment Startup and Commissioning RCS-116 and TRITON 6.95 \$ 45,000.00

This budgetary proposal does not include any rigging, ductwork, electrical or utility installation. Upon request, CPI can provide a turnkey proposal based on details of the install location.

Payment Terms

- Net 10 Days upon receipt of invoice
- 30% down payment to initiate the order
- 30% upon submission of general arrangement drawing and PID
- 30% upon notification of equipment ready to ship
- 10% upon installation or 30 days after notification of equipment ready to ship, whichever comes first

Equipment Delivery

Rotary Concentrator System (RCS) > Regenerative Thermal Oxidizer (RTO)

42-44 weeks ready to ship after receipt of signed approval drawings

Equipment Shipment

EXW, CPI Factory. Buyer is responsible for all shipping costs. CPI can offer other options such as FOB Destination where CPI includes the cost of freight, if requested.

Note: Budgetary Pricing plus or minus twenty 20% percent

Buyers Responsibilities

The following list will detail items that are required to complete the project and who is responsible to complete the project (CPI / Buyer). NOTE: This list of responsibilities can change based on the final agreed to scope of supply for various installation services. CPI has not provided any installation costs as part of this proposal; CPI can provide a proposal for installation services using non-union personnel. All work will be quoted based on normal work hours, M-F 7am-7pm non-holiday. If premium time is required, CPI will provide a proposal that reflects the customer's needs:

	CPI	Buyer
Supply concrete pad designed to adequately support the TRITON system and related components. CPI to provide a concrete pad drawing based off-of customer supplied soil boring report. Note: Pad must be flat and level with no slope +/-1/8".		X
Provide stack anchor bolt size/embedment and steel anchor bolt template	X	
Natural gas supply piping to the TRITON system gas train inlet as required for the TRITON system.		X
Equipment rigging, assembly and anchoring to pad <u>if optional rigging by CPI is not selected.</u>		X
Process ducting and control or bypass dampers from the sources to the TRITON inlet, based upon CPI provided sizing and specifications.		X
Multi-stage prefilter	X	
Electrical service to the TSS control panel mounted outside on the RTO chassis for the TRITON system.		X
Inter-connecting wiring between remote panel VFD and processes and any duct mounted instruments and/or dampers. CPI to provide wire pull schedule for local electrician.		X
Compressed air supply piping of clean, dry (-40 °F dewpoint) at as required.		X
Required construction and/or operating permits. CPI will provide equipment data necessary for Buyer or their consultant to prepare the permit. If special registrations (such as; CE, UL, PE or others) are required, the costs for such expertise will be re-billed at cost. All fees for permits are payable by the Buyer.		X
Freight to site. Buyer is responsible for all shipping costs. CPI can offer other options such as FOB Destination where CPI includes the cost of freight, if requested.		X
Unloading and storage of equipment if required.		X
All controls and instruments other than specified. (i.e.; flow measurement, LEL devices, detonation and flame arrestors, etc.)		X
Provide plant personnel and production ready conditions for startup and operator training at time of startup.		X
Startup service for any delays caused by the customer or representatives of the customer will be billed at \$165.00/hr. for normal weekdays, \$247.50/hr. for weekends, \$300.00 for all holidays, and all expenses plus 12%.		X
Any time required for plant specific safety training to work on site over and above 1 hr will be billed at \$165.00/hr		X
Compliance testing if required.		X

Terms and Conditions

I. ACCEPTANCE

All sales of material or equipment by Catalytic Products International are expressly conditioned upon the terms and conditions set forth in the written order acknowledgment of Seller. Any additional or different terms of conditions set forth in the purchase order of the Buyer or any similar such communication, are hereby objected to by Catalytic Products International and shall not be binding nor effective unless assented to in writing by Catalytic Products International.

II. CANCELLATION

Buyer acknowledges this is custom engineered and fabricated equipment to the buyers exacting specifications. Buyer may cancel any order only by mutual agreement, and only upon written notice to Catalytic Products International, and with payment to Catalytic Products International of reasonable cancellation charges, including but not limited to (1) the proportionate contract price for all material completed, whether shipped or not, prior to notice of cancellation is received; (2) an inventory restocking fee equal to 30% of the original order including any change orders; and (3) all expenses incurred by Catalytic Products International by reason of such cancellation, including reimbursement for any charges arising from termination of sub-contract claims.

III. DAMAGE OR LOSS

The Company shall not be liable for damage to or loss of equipment after delivery of such equipment to the point of shipment. In the case of equipment to be installed by or under supervision of the Company, the Company shall not be liable for damage or loss after delivery by the carrier to the site of installation. If, thereafter, pending installation or completion of installation or full performance by the Company, any such equipment is damaged or destroyed by any cause whatsoever, other than by the fault of the Company, the Buyer agrees promptly to pay or reimburse to the Company, in addition to or apart from any and all other sums due or to become due hereunder, an amount equal to the damage or loss so occasioned.

IV. DELAYED SHIPMENTS

Quoted shipping dates are approximate. Catalytic Products International will use its best efforts to fill all orders within the time quoted. However, final shipping schedules shall be subject to any conditions that may prevent compliance with acknowledged delivery schedules. Catalytic Products International shall not be liable for failure to give notice any delay, and such delay shall not constitute grounds for cancellation.

Catalytic Products International reserves the right to store such products in a warehouse for the accounts and at the risk of the Buyer after the products or any substantial portion thereof are ready for shipment cannot be made for either of the following reasons:

- (a) If CPI is prevented from making shipment or delivery in accordance with instructions of the Buyer, or
- (b) By strike, boycott, natural disaster, governmental law, regulation, or circumstances beyond the control of CPI.

V. FIELD SERVICE

Unless otherwise noted herein, the cost of this equipment does not include service and/or installation. Field service, as stated in proper written quotation, for repair or start-up will be charged at a per diem rate plus all living and traveling expenses incurred from the time of leaving base of operations until return. Premium rate will be charged for work in excess of eight hours per day and for Saturday, Sunday, and holiday work. On start-up projects Catalytic Products International should be notified approximately thirty days prior to the start-up date, and name and title of a single authority responsible for securing and releasing personnel should be included. Catalytic Products International service representative will require time verification sheets to be approved by the Buyer's authorized representative at the completion of each day's work.

Upon request, Catalytic Products International in its discretion will furnish as an accommodation to Buyer such technical advice or assistance as is available in reference to the use of the product by Buyer. Catalytic Products International assumes no obligation or liability for the advice or assistance given or results obtained, all such advice or assistance being given and accepted at Buyer's risk.

VI. GUARANTEE

Material and equipment distributed by Catalytic Products International are the products of reputable manufacturers sold under their respective brand or trade names. Catalytic Products International shall use its best efforts to obtain from each manufacturer, in accordance with the manufacturer's warranty (copies of which will be furnished upon request) or customary practice, the repair or replacement of products that may prove defective in material or workmanship. The foregoing shall constitute the exclusive remedy of the Buyer and the sole obligation of Catalytic Products International. Except as to title, THERE ARE NO WARRANTIES, WRITTEN, ORAL, IMPLIED, OR STATUTORY, relating to the described material or equipment, which extends beyond that described in this paragraph. NO WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR PURPOSE SHALL APPLY. Any and all such warranties are subject to purchaser's application of purchased equipment and materials strictly and exclusively within the technical specification as defined in Catalytic Products International's order acknowledgment and general technical description.

With acknowledgment of Buyer's order, Seller assumes that Buyer has verified technical specifications as set forth in this contract and Buyer has the responsibility for correctness of said technical specifications. Unless specially noted, this proposal is not intended to exactly meet the Buyers specification and if conflict arises, this proposal takes precedence.

Performance guarantees for catalyst and systems shall be strictly and exclusively limited to those expressly stated in Seller's written order acknowledgment, and such guarantees shall only apply if catalysts were found in original and sealed factory package. Performance guarantees for heat exchangers shall be strictly and exclusively limited to those expressly stated in Seller's written order acknowledgment based on nominal (+/- 5%) efficiencies. All replacements arising from claims on guarantees as herein stated are made FOB Shipping Point (American Uniform Commercial Code) Seller's Plant.

The foregoing warranty is in lieu of and excludes all other expressed or implied warranties of merchantability or fitness for any particular use. Seller guarantees that catalysts have been given to carrier in unbroken original factory sealed package.

VII. LIABILITY

The Company will not be liable for any damage caused by the operation of the machinery or devices purchased whether or not operated in accordance with instructions or because of any failure to meet conditions of our guarantee. Liability under any contract shall in no case exceed the price paid for goods furnished by Catalytic Products International. In no event will Catalytic Products International be liable for consequential damages, or the failure of the Buyer to provide proper safety features for the protection of personnel in the use of operation of equipment.

Catalytic Products International's liability on any claim for loss or damage arising out of this contract or from the performance or breach thereof or connected with the supplying of material or equipment hereunder, or its sale, resale, operation or use, whether based on warranty, contract, negligence or other

grounds, shall not exceed the price allowable to such material or equipment or part thereof involved in the claim. Catalytic Products International shall not, under any circumstances, be liable for any labor charges unless agreed upon in advance in writing by Catalytic Products International.

Buyer assumes full responsibility for proper handling and storage of catalysts and equipment, after receipt from carrier, in accordance with Seller's instructions. Warranties and guarantees become void unless handling and storage was made in accordance with Seller's instructions.

VIII PATENTS

The Company shall hold Buyer harmless for any expense or loss resulting from infringement of patents or trademarks arising from compliance with the Buyer's designs or specifications.

IX. PRICING

Seller reserves the right (a) to revise any price quoted without notice to Buyer, at any time prior to acceptance of Buyer's purchase order by Seller, (b) unless otherwise noted, all prices by Catalytic Products International are subject to change without notice. Prices do not include sales, use, excise, value added, or similar taxes, and where applicable, such taxes shall be billed as a separate item and paid by the Buyer. Unless otherwise noted, all sales are made FOB Shipping Point (American Uniform Commercial Code) with no allowance for special crating, duties or fees and in all cases, title shall pass upon delivery at point of shipment and thereafter all risk of loss or damage shall be upon the Buyer.

All items shown as freight allowed pertains to particular items and quantities. Any deviation after placement of order such as changes in quality or partial release will be subject to the manufacturer's terms and conditions where applicable.

X. RETURNED MATERIAL

No credit will be given for returns except by specific written approval of Seller. No special designed catalyst materials or equipment may be returned. No catalyst, burner nozzle, burner block, or other parts directly exposed to flame, condensate or poisonous substances may be returned after use.

XI. SHIPMENT

All shipments will be made FOB Shipping Point s (American Uniform Commercial Code) Catalytic Products International factory unless otherwise specified. In the absence of specific instructions, Catalytic Products International will select the carrier. Title to the material shall pass to the Buyer upon delivery thereof by Catalytic Products International to the carrier, delivery or pick-up service. Thereupon the Buyer shall be responsible thereof. Products held for Buyer, or stored for Buyer, shall be at the risk and expense of Buyer. Claims against Catalytic Products International for shortages must be made within 48 hours after arrival of shipment at Buyer's destination.

Shipping dates are approximate and only as shows on the order acknowledgment. Shipping dates are not guaranteed. Catalytic Products International shall not be liable for delays in delivery or failure to manufacture or deliver due to causes beyond its reasonable control, including but not limited to acts of God, acts of Buyer, acts of military or civil authorities, fires, strikes, flood, epidemic, war, riot, delays in transportation or car shortages, or inability to obtain necessary labor materials, components or manufacturing facilities. In the event of any such delay, the date of delivery shall be extended for a period equal to the time lost by reason of such delay. In the event of impossibility of performance resulting from any of the above causes, Catalytic Products International shall have the right to cancel this contract without further liability to Buyer. Cancellation of any part of this order shall not affect Catalytic Products International's right to payment for any product delivered hereunder. Orders with indefinite delivery dates are accepted upon the understanding that Catalytic Products International shall have the right to fill said order as it sees fit in the course of its manufacturing schedules and to hold the goods for the Buyer's account at Buyer's expense and risk, pending receipt of definite delivery instructions.

XII. SUPPLEMENTAL CLAUSES FOR EXPORT ORDERS

(a)...Currency: The prices quoted herein are payable in U.S. Dollars, unless otherwise stated in written order acknowledgment.

(b)...Proof of Export: Those products which are to be purchased only for export: The Buyer agrees to furnish Catalytic Products International with proof of exportation of all or any part of such products within five months from the date of the Catalytic Products International invoices therefore, or if exportation of any part shall not have occurred within that period. Buyer agrees to pay Catalytic Products International upon demand, the amount of any manufacturer's excise tax or other tax which now or hereafter may be imposed on the sale of such products for consumption within the United States.

(c)...License and Permit Requirements:

(1)...Catalytic Products International will secure all export licenses and permits required by the United States Government and Buyer will furnish reasonable cooperation in acquiring such licenses and permits. If such licenses and permits are paid for by Buyer such payments will be added to the contract price.

(2)...Buyer will secure all licenses and permits required by the foreign government and Catalytic Products International will furnish reasonable cooperation in acquiring such licenses and permits. The delivery schedule is contingent upon securing all necessary licenses and permits.

(3)...Failure to obtain a required license or permit in sufficient time to permit delivery within the time set forth in the contract, and without the fault or negligence of the contracting parties, shall occasion an equitable adjustment in the delivery schedule.

XIII. TAXES

The prices shown do not include any taxes (sales, excise, use, etc...) or any government charges. Such taxes or charges applicable to the order will be paid by the Buyer except where specifically exempt by a certificate. Only when Catalytic Products International is registered to collect applicable taxes will such taxes be added to the invoice and collected by Catalytic Products International.

XIV. NON-SOLICITATION

Each party agrees that beginning on the contract acceptance date and for a period of twelve (12) months after final acceptance or earlier termination of this Agreement, it shall not (i) solicit, encourage, advise, induce or cause any employee of the other party [who worked directly or indirectly on the Services after the contract acceptance date] to terminate his or her employment with such party or any of its subsidiaries or Affiliates, nor provide any assistance, encouragement, information, or suggestion to any person or entity regarding the solicitation or hiring of any employee of the other party or any of its subsidiaries or Affiliates; or (ii) induce or attempt to induce any person, business or entity which is a supplier or customer of a party, or which otherwise is a contracting party with a party, to terminate any agreement with a party.

Weaver, William (DEP)

From: David Simmons <David.Simmons@trinityconsultants.com>
Sent: Thursday, June 8, 2023 4:16 PM
To: Kissinger, Christopher
Cc: Fiore, Joe R; Bianca, Tom; Weaver, William (DEP); Christie Heath; Joe Maiale
Subject: [External] Response to TECHNICAL DEFICIENCY LETTER: NOV Fiber Glass Systems - Alternative RACT 3 Proposal
Attachments: NOV Fiberglass RACT III Decifiency Response FNL.pdf

ATTENTION: *This email message is from an external sender. Do not open links or attachments from unknown senders. To report suspicious email, use the [Report Phishing button in Outlook](#).*

Mr. Kissinger, we are submitting this response letter on behalf of NOV Fiberglass Systems (NOV). The NOV contact (Joe Fiore) is copied on this email.

Please contact either Joe Fiore or me if you have any questions.

David Simmons
Managing Consultant

D 240.379.6885 O 240.379.7490 x2105
5320 Spectrum Dr. Suite A | Frederick, MD 21703
Email: David.Simmons@trinityconsultants.com

June 8, 2023

Christopher Kissinger, E.I.T.
AQE
Department of Environmental Protection
909 Elmerton Avenue
Harrisburg, PA 17110
chrkissing@pa.gov

*RE: NOV Fiber Glass Systems - Title V Operating Permit 31-05005
Alternative RACT 3 Proposal
Technical Deficiency Response*

Dear Mr. Kissinger:

NOV Fiberglass Systems (NOV) operates a fiberglass tank manufacturing plant in Huntingdon County, Pennsylvania (Mt. Union Plant) under Title V operating permit No. 31-05005. On December 28, 2022, NOV submitted an Initial Notification and Case-by-Case Analysis (Alternative RACT III Proposal) for the Mt. Union Plant. On April 12, 2023, the Pennsylvania Department of Environmental Protection (PADEP) sent a technical deficiency letter pertaining to the Alternative RACT III Proposal. This letter is being submitted by Trinity Consultants, Inc. on behalf of NOV and provides NOV's response to the deficiency letter.

COMMENTS AND RESPONSES

1. **PADEP Comment:** The cost analysis was done using EPA Air Pollution Control Cost Manual Sixth Edition. Although many of the equations are the same, there are differences in methodology between that version and the current Seventh Edition. Please provide a revised cost analysis following the methodology in the Seventh Edition.

NOV Response: A revised cost analysis using the Seventh Edition of the EPA's Air Pollution Control Manual was compiled and is attached to this letter. Quotes for regenerative thermal oxidizers (RTOs) with concentrators were received from two vendors. The average capital cost of each estimate is used to represent the equipment costs instead of the cost estimated from the design parameter steps outlined in the Seventh Edition. Fuel input rates were also provided by one of the vendors, which were also used instead of the Seventh Edition estimating methodology. The Seventh Edition methodology was used for other calculations such as installation and indirect annual costs.

2. **PADEP Comment:** The cost analysis was done using the Consumer Price Index (CPI). According to Chapter 2 of EPA's Cost Manual: "The CPI is not recommended because the price change of interest is among consumer goods and services which have little relevance to capital project spending or industrial intermediate goods such as raw materials such as reagents." Please provide an updated cost analysis with a different index which is more applicable for this purpose (PPI, GDP, CEPCI, M&S, etc.), and explain why the given index was chosen.

NOV Response: The revised cost analysis was performed using 2023 vendor quotes and 2023 pricing. As such, no adjustment to cost based on an index was required to complete the revised analysis.

- PADEP Comment:** The 2014 vendor estimate was used as the basis for estimating equipment costs (EC), via scaling, and energy usage. The vendor unit is both a VOC concentrator and RTO. Please note the methodology used in the cost analysis was strictly relating to oxidizer costs. Considering the true airflow to the RTO is 1/14 of the quoted inlet flow rate used in the estimate calculations, it is unclear to DEP whether the difference in airflow between the vendor facility and this facility warrant scaling down of equipment costs or fuel costs. Please re-assess the manner the 2014 vendor estimate is used in this cost analysis and provide further explanation on the appropriateness of the vendor estimate and the cost analysis methodology utilized.

NOV Response: A quote for an RTO with a concentrator was provided in the original alternative RACT III proposal. This quote was provided for a similar facility and was scaled to adjust for the size difference needed at NOV's Mt. Union plant. Vendor quotes were used in the updated analysis and reflect an installation at the Mt. Union Plant. The VOC concentrator is considered best available technology due to the large flowrate and low VOC concentration emitted from the Layup Areas. The concentrator allows for the excess air to be separated from the fugitive emissions stream requiring less natural gas to be combusted in the RTO. The revised calculations used the natural gas consumption estimate that was provided in one of the vendor quotes.

- PADEP Comment:** Per Containment Solutions' response to item 3 in its Technical Deficiency Response Letter (dated 8/13/17):

"Due to the difficulty in estimating actual VOC concentrations in the exhaust stream, calculations were not performed to estimate annual fuel costs for the RTO."

Additionally, per Item 3 of this letter, it is unclear to DEP whether the fuel cost scaling based on the 2014 vendor estimate is appropriate. Please provide technical justification for the use of the provided fuel cost estimation methodology in lieu of calculating fuel needs via process gas stream characteristics.

NOV Response: As discussed in the response to Comments #1 and #3, NOV received a vendor quote for the installation of an RTO with a concentrator at the Mt. Union facility that included operating parameters such as fuel usage. The cost, based on the fuel usage, was calculated and included in the revised cost analysis.

- PADEP Comment:** For any cost analysis, sales tax should not be included as PA exempts sales tax from all pollution control equipment. See 61 Pa. Code 32.32(a)(2)(ii).

NOV Response: NOV has revised the cost analysis and sales tax is not included in the analysis.

- PADEP Comment:** If some components of a feasible technology are already in place at the facility, the quote should not include those pieces that are already installed.

NOV Response: NOV has ensured that the quote from the vendors are only for the RTO and concentrator. Additional costs such as any foundation work for the unit was not included in the quote. Although the quote assumes connection to the existing ventilation ductwork if feasible, NOV expects additional cost to be associated with this element of the project. Those additional costs have not been included in this analysis.

7. **PADEP Comment:** The most recent available labor rate information for Pennsylvania (per BLS Occupational Employment and Wage Statistics for May 2021) indicates a mean rate of \$28.87/hr for Operators, and \$30.11/hr for Maintenance. The site-specific rates listed in the cost analysis are \$38.52/hr and \$41.53/hr, respectively. Please provide documentation verifying these labor rates.

NOV Response: The revised cost analysis calculations include revised labor rates. These are \$47.55/hr for Operators and \$51.62/hr for Maintenance. These reflect the actual rates used for labor at the Mt. Union facility including benefits.

~~~~~

NOV appreciates the opportunity to provide additional information in support of Alternative RACT Proposal for Source ID 101. If you have any questions regarding this letter or require any additional information, please feel free to contact Joe Fiore at (717) 250-0148 or Joe.Fiore@nov.com.

Sincerely,



David Simmons  
Managing Consultant

Attachments

cc: Joe Fiore, NOV Fiberglass

**ATTACHMENT 1**  
**Cost Analysis Tables**

## Data Inputs for NOV Fiberglass - Mount Union, PA Cost Estimate

### Enter the design data for the proposed oxidizer:

|                                |                               |
|--------------------------------|-------------------------------|
| Number of operating hours/year | 7,884 hours/year <sup>a</sup> |
| Fuel Usage Rate (Natural Gas)  | 5.35 MMBtu/hr <sup>b</sup>    |
| Heat of Combustion (Btu/scf)   | 1,000 Btu/scf                 |
| Destruction Efficiency         | 98 percent <sup>c</sup>       |
| Estimated Equipment Life       | 20 Years                      |
| Fan Power Consumption (FP)     | 249 kW <sup>d</sup>           |

- a. All cost calculations assume an operating time of 90% of the year (7,884 hr/yr).
- b. Fuel usage rate was provided in vendor quote.
- c. 98% destruction efficiency provided in vendor quote.
- d. Electricity usage rate was provided in vendor quote.

### Enter the cost data:

|                                               |                               |
|-----------------------------------------------|-------------------------------|
| Dollar-year                                   | 2023                          |
| Annual Interest Rate (i)                      | 7.00 %                        |
| Electricity (Cost <sub>elect</sub> )          | \$0.09 \$/kWh <sup>a</sup>    |
| Natural Gas Fuel Cost (Cost <sub>fuel</sub> ) | 0.01231 \$/scf <sup>b</sup>   |
| Operator Labor Rate                           | \$47.55 per hour <sup>c</sup> |
| Maintenance Labor rate                        | \$51.62 per hour <sup>c</sup> |
| Contingency Factor (CF)                       | 10.0 Percent                  |

- a. EIA: [https://www.eia.gov/electricity/monthly/epm\\_table\\_grapher.php?t=epmt\\_5\\_6\\_a](https://www.eia.gov/electricity/monthly/epm_table_grapher.php?t=epmt_5_6_a)
- b. U.S. Energy Information Administration
- c. Operator and Maintenance Labor Rates provided by NOV on 5/2/2023.

| Parameter                       | Equation                                                                     | Calculated Value |
|---------------------------------|------------------------------------------------------------------------------|------------------|
| Capital Recovery Factor (CRF) = | $i (1+i)^n / (1+i)^n - 1 =$<br>Where n = Equipment Life and i= Interest Rate | 0.0944           |

## Cost Estimate for NOV Fiberglass - Mount Union, PA

| Cost Estimate for NOV Fiberglass - Mount Union, PA                                                                                                   |                                                                                                                 |                      |                                               |
|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|----------------------|-----------------------------------------------|
| Direct Costs                                                                                                                                         |                                                                                                                 |                      |                                               |
| Total Purchased equipment costs (in 2023 dollars)                                                                                                    |                                                                                                                 |                      |                                               |
| Incinerator + auxiliary equipment (A) =                                                                                                              |                                                                                                                 |                      |                                               |
| Equipment Costs (EC) for RTO                                                                                                                         | Average of 2023 Vendor Quotes <sup>a</sup>                                                                      | \$2,082,350          | in 2023 dollars                               |
| Freight =                                                                                                                                            | 0.05 × A =                                                                                                      | \$104,118            |                                               |
|                                                                                                                                                      |                                                                                                                 |                      |                                               |
|                                                                                                                                                      | Total Purchased equipment costs (B) =                                                                           | \$2,186,468          | in 2023 dollars                               |
| <b>Footnotes</b>                                                                                                                                     |                                                                                                                 |                      |                                               |
| a - Two vendor quotes were requested and received. An average of these quotes was used to represent the 2023 costs for an RTO + Concentrator system. |                                                                                                                 |                      |                                               |
| Direct Installation Costs (in 2023 dollars)                                                                                                          |                                                                                                                 |                      |                                               |
| Foundations and Supports =                                                                                                                           | 0.08 × B =                                                                                                      | \$174,917            |                                               |
| Handling and Erection =                                                                                                                              | 0.14 × B =                                                                                                      | \$306,105            |                                               |
| Electrical =                                                                                                                                         | 0.04 × B =                                                                                                      | \$87,459             |                                               |
| Piping =                                                                                                                                             | 0.02 × B =                                                                                                      | \$43,729             |                                               |
| Insulation for Ductwork =                                                                                                                            | 0.01 × B =                                                                                                      | \$21,865             |                                               |
| Painting =                                                                                                                                           | 0.01 × B =                                                                                                      | \$21,865             |                                               |
|                                                                                                                                                      |                                                                                                                 |                      |                                               |
|                                                                                                                                                      | Total Direct Installation Costs =                                                                               | \$655,940            |                                               |
| Total Direct Costs (DC) =                                                                                                                            | B + C + SP + Bldg =                                                                                             | \$2,842,408          | in 2023 dollars                               |
| Total Indirect Installation Costs (in 2023 dollars)                                                                                                  |                                                                                                                 |                      |                                               |
| Engineering =                                                                                                                                        | 0.10 × B =                                                                                                      | \$218,647            |                                               |
| Construction and field expenses =                                                                                                                    | 0.05 × B =                                                                                                      | \$109,323            |                                               |
| Contractor fees =                                                                                                                                    | 0.10 × B =                                                                                                      | \$218,647            |                                               |
| Start-up =                                                                                                                                           | 0.02 × B =                                                                                                      | \$43,729             |                                               |
| Performance test =                                                                                                                                   | 0.01 × B =                                                                                                      | \$21,865             |                                               |
|                                                                                                                                                      |                                                                                                                 |                      |                                               |
|                                                                                                                                                      | Total Indirect Costs (IC) =                                                                                     | \$612,211            |                                               |
| Contingency Cost (C) =                                                                                                                               | CF(IC+DC) =                                                                                                     | \$345,462            |                                               |
| <b>Total Capital Investment =</b>                                                                                                                    | <b>DC + IC + C =</b>                                                                                            | <b>\$3,800,081</b>   | <b>in 2023 dollars</b>                        |
| Direct Annual Costs                                                                                                                                  |                                                                                                                 |                      |                                               |
| Annual Electricity Cost                                                                                                                              | = Annual Electricity Usage × Operating Hours/year × Electricity Price =                                         | \$182,177            |                                               |
| Annual Fuel Costs for Natural Gas                                                                                                                    | = Cost <sub>fuel</sub> × Fuel Usage Rate <sup>b</sup> × 60 min/hr × Operating hours/year                        | \$519,228            |                                               |
| Operating Labor                                                                                                                                      | Operator = 0.5 hours/shift × Labor Rate × (Operating hours/8 hours/shift)<br>Supervisor = 15% of Operator       | \$23,430<br>\$3,515  |                                               |
| Maintenance Costs                                                                                                                                    | Labor = 0.5 hours/shift × Labor Rate × (Operating Hours/8 hours/shift)<br>Materials = 100% of maintenance labor | \$25,436<br>\$25,436 |                                               |
|                                                                                                                                                      |                                                                                                                 |                      |                                               |
| <b>Direct Annual Costs (DC) =</b>                                                                                                                    |                                                                                                                 | <b>\$779,222</b>     | <b>in 2023 dollars</b>                        |
| Indirect Annual Costs                                                                                                                                |                                                                                                                 |                      |                                               |
| Overhead                                                                                                                                             | = 60% of sum of operating, supervisor, maintenance labor and maintenance materials                              | \$46,690             |                                               |
| Administrative Charges                                                                                                                               | = 2% of TCI                                                                                                     | \$76,002             |                                               |
| Property Taxes                                                                                                                                       | = 1% of TCI                                                                                                     | \$38,001             |                                               |
| Insurance                                                                                                                                            | = 1% of TCI                                                                                                     | \$38,001             |                                               |
| Capital Recovery                                                                                                                                     | = CRF × TCI                                                                                                     | \$358,701            |                                               |
|                                                                                                                                                      |                                                                                                                 |                      |                                               |
|                                                                                                                                                      |                                                                                                                 |                      |                                               |
| <b>Indirect Annual Costs (IC) =</b>                                                                                                                  |                                                                                                                 | <b>\$557,394</b>     | <b>in 2023 dollars</b>                        |
| <b>Total Annual Cost =</b>                                                                                                                           | <b>DC + IC =</b>                                                                                                | <b>\$1,336,616</b>   | <b>in 2023 dollars</b>                        |
| Cost Effectiveness                                                                                                                                   |                                                                                                                 |                      |                                               |
| Cost Effectiveness = (Total Annual Cost)/(Annual Quantity of VOC/HAP Pollutants Destroyed)                                                           |                                                                                                                 |                      |                                               |
| Total Annual Cost (TAC) =                                                                                                                            |                                                                                                                 | \$1,336,616          | per year in 2023 dollars                      |
| VOC/HAP Pollutants Destroyed <sup>c</sup> =                                                                                                          |                                                                                                                 | 88.1                 | tons/year                                     |
| Cost Effectiveness =                                                                                                                                 |                                                                                                                 | \$15,176             | per ton of pollutants removed in 2023 dollars |

<sup>b</sup> Based on estimated natural gas consumption of 5.35 MMBtu/hour, 1,020 btu/scf natural gas, and natural gas cost of \$0.01231 per scf natural gas.

<sup>c</sup> VOC removed estimated based on 91% of total resin throughput used in the mandrel and end cap production areas, an estimated emissions capture efficiency of 85%, an estimate RTO uptime of 90%, and a control efficiency of 98%.

## Kissinger, Christopher

---

**From:** Kissinger, Christopher  
**Sent:** Wednesday, April 12, 2023 1:24 PM  
**To:** joe.fiore@nov.com  
**Cc:** Bianca, Tom; Weaver, William (DEP); CHeath@trinityconsultants.com; David.Simmons@trinityconsultants.com  
**Subject:** TECHNICAL DEFICIENCY LETTER: NOV Fiber Glass Systems - Alternative RACT 3 Proposal

Re: Technical Deficiency Letter  
NOV Fiber Glass Systems  
Alternative RACT 3 Proposal  
Title V Operating Permit No. 31-05005  
Shirley Township, Huntingdon County

Dear Mr. Fiore,

### Technical Deficiencies

1. The cost analysis was done using EPA Air Pollution Control Cost Manual Sixth Edition. Although many of the equations are the same, there are differences in methodology between that version and the current Seventh Edition. Please provide a revised cost analysis following the methodology in the Seventh Edition.
2. The cost analysis was done using the Consumer Price Index (CPI). According to Chapter 2 of EPA's Cost Manual: *"The CPI is not recommended because the price change of interest is among consumer goods and services which have little relevance to capital project spending or industrial intermediate goods such as raw materials such as reagents."* Please provide an updated cost analysis with a different index which is more applicable for this purpose (PPI, GDP, CEPCI, M&S, etc.), and explain why the given index was chosen.
3. The 2014 vendor estimate was used as the basis for estimating equipment costs (EC), via scaling, and energy usage. The vendor unit is both a VOC concentrator and RTO. Please note the methodology used in the cost analysis was strictly relating to oxidizer costs. Considering the true airflow to the RTO is 1/14 of the quoted inlet flow rate used in the estimate calculations, it is unclear to DEP whether the difference in airflow between the vendor facility and the this facility warrant scaling down of equipment costs or fuel costs. Please re-assess the manner the 2014 vendor estimate is used in this cost analysis and provide further explanation on the appropriateness of the vendor estimate and the cost analysis methodology utilized.
4. Per Containment Solutions' response to item 3 in its Technical Deficiency Response Letter (dated 8/13/17):

*"Due to the difficulty in estimating actual VOC concentrations in the exhaust stream, calculations were not performed to estimate annual fuel costs for the RTO."*

Additionally, per Item 3 of this letter, it is unclear to DEP whether the fuel cost scaling based on the 2014 vendor estimate is appropriate. Please provide technical justification for the use of the provided fuel cost estimation methodology in lieu of calculating fuel needs via process gas stream characteristics.

5. For any cost analysis, sales tax should not be included as PA exempts sales tax from all pollution control equipment. See 61 Pa. Code 32.32(a)(2)(ii).

6. If some components of a feasible technology are already in place at the facility, the quote should not include those pieces that are already installed.
7. The most recent available labor rate information for Pennsylvania (per BLS Occupational Employment and Wage Statistics for May 2021) indicates a mean rate of \$28.87/hr for Operators, and \$30.11/hr for Maintenance. The site-specific rates listed in the cost analysis are \$38.52/hr and \$41.53/hr, respectively. Please provide documentation verifying these labor rates.

Please submit a response fully addressing the significant technical deficiency set forth above, within 30-calendar days, or DEP may deny the application. Or, if you believe that time frame is not feasible, please promptly propose an alternative, expeditious time frame for providing the requested information.

If you believe that the stated deficiency is not significant, instead of submitting a response to the deficiency, you have the option of asking DEP to make a decision based on the information with regard to the subject matter of that deficiency that you have already made available. If you choose this option with regard to any deficiency, you should explain and justify how your current submissions satisfy that deficiency. Please keep in mind that if you fail to respond, your application may be denied.

Should you have any questions regarding the identified deficiency, please contact me at 717-705-4872, or [chrkissing@pa.gov](mailto:chrkissing@pa.gov) and refer to Project No. 2585 to discuss your concerns or to schedule a meeting.

Any meeting should be scheduled within the 30-day period allotted for your reply, unless otherwise extended by DEP. You may also follow your applications through the review process via eFACTS on the Web at: <http://www.ahs2.dep.state.pa.us/eFactsWeb/default.aspx>.

Sincerely,

**Christopher Kissinger, E.I.T.** | AQE  
Department of Environmental Protection  
Southcentral Regional Office  
909 Elmerton Avenue | Harrisburg, PA 17110  
Phone: 717.705.4872 | Fax: 717.705.4830  
[www.dep.pa.gov](http://www.dep.pa.gov)

## Weaver, William (DEP)

---

**From:** David Simmons <David.Simmons@trinityconsultants.com>  
**Sent:** Wednesday, December 28, 2022 8:13 AM  
**To:** Weaver, William (DEP)  
**Cc:** Fiore, Joe R; Christie Heath  
**Subject:** [External] RACT III Notification for NOV Fiberglass - Mt. Union Plant  
**Attachments:** RACT III NOV Fiberglass - Mt Union.pdf

**ATTENTION:** This email message is from an external sender. Do not open links or attachments from unknown senders. To report suspicious email, use the [Report Phishing button in Outlook](#).

Mr. Weaver,

Please find attached the RACT III notification and report for the NOV Fiberglass facility in Mount Union, Pennsylvania. NOV Fiberglass is submitting this application to satisfy all notification and reporting requirements required under 25 Pa Code, Chapter 129: Additional RACT Requirements for Major Sources of NO<sub>x</sub> and VOCs for the 2015 Ozone NAAQS (the "RACT III Rule").

Please contact Joe Fiore (717.250.0148) if you have any questions. Please also respond to this email confirming receipt of the document.

**David Simmons**  
Managing Consultant

P 240.831.4246 M 304.268.6288  
5320 Spectrum Dr. Suite A | Frederick, MD 21703  
Email: [David.Simmons@trinityconsultants.com](mailto:David.Simmons@trinityconsultants.com)

# **RACT III PROPOSAL**

## **Initial Notification and Case by Case Analysis**

### **NOV Fiberglass Systems / Mt. Union Plant**

**Prepared By:**

Christie Heath – Managing Consultant  
David Simmons – Managing Consultant

**TRINITY CONSULTANTS**

211 Welsh Pool Rd  
Suite 238  
Exton, PA 19341

December 28, 2022

Project 223902.0097



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# 1. EXECUTIVE SUMMARY

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NOV Fiber Glass Systems (NOV) currently operates a production plant in Huntingdon County, Pennsylvania (Mt. Union Plant) under Title V operating permit No. 31-05005, issued August 14, 2020. The Mt. Union plant is considered a major volatile organic compound (VOC) emitting facility and is not considered a major nitrogen oxides (NOx) emitting facility as defined in Title 25 of the Pennsylvania Code, Chapter 121.1 (25 Pa Code 121.1). The Mt. Union Plant changed ownership from Containment Solutions, Inc. (CSI) to NOV Fiberglass Systems when NOV acquired Denali Incorporated (parent company of CSI) in 2019. The RACT II Proposal in 2016 was submitted by CSI and subsequently approved by the Pennsylvania Department of the Environment (PADEP).

At the Mt. Union Plant, NOV manufactures storage tanks using a fiberglass-reinforced plastics (FRP) open molding process, which includes six molding stations (mandrels), as well as hand layup and resin spraying activities. The FRP manufacturing process utilizes complex polymeric compounds resulting from the cross-linking reaction of a liquid unsaturated polyester with a vinyl monomer. The monomer used by NOV at the Mt. Union plant is styrene. The liquid resin is mixed with a catalyst to initiate polymerization into a solid thermoset. Catalyst concentrations range from 1 to 2 percent by weight of resin. Resins may also contain inhibitors to prevent premature curing during storage, and promoters to lower the temperature at which polymerization occurs. This facility primarily uses a non-atomized pouring process onto a rotating mandrel for building the tank shell while spray and hand lay-up techniques are used to produce the end caps and fittings.

The Pennsylvania Department of Environmental Protection (PADEP) published 25 Pa. Code, Chapter 129: Additional RACT Requirements for Major Sources of NOx and VOCs for the 2015 Ozone NAAQS (the "RACT III Rule") in the Pennsylvania Bulletin (PA Bulletin) on November 12, 2022 (52 Pa. Bulletin 6960). RACT is defined in 25 Pa Code 121.1 as "the lowest emission limit for VOC or NOx that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility." The RACT III standards apply to existing major NOx and major VOC emitting facilities throughout Pennsylvania. Existing major facilities include those facilities which are major sources of NOx and/or VOC that commenced operation on or before August 3, 2018 and existing minor facilities which become major sources of NOx and/or VOC after August 3, 2018. The RACT III Regulation provides three options for compliance, as applicable:

- ▶ Compliance Option 1: Presumptive RACT pursuant to 25 Pa Code §129.112;
- ▶ Compliance Option 2: Facility-wide or system-wide NOx averaging pursuant to 25 Pa Code §129.113; and
- ▶ Compliance Option 3: Alternative RACT Proposal pursuant to 25 Pa Code §129.114

NOV is submitting this notification to satisfy all initial notification and reporting requirements required for the Mt. Union Plant in accordance with 25 Pa Code, Chapter 129: Additional RACT Requirements for Major Sources of NOx and VOCs for the 2015 Ozone NAAQS (the "RACT III Rule"). This RACT Proposal is organized in the following sections to address the appropriate requirements:

- ▶ Section 2 – Initial Notification
- ▶ Section 3 – Streamlined Alternative RACT Proposal
- ▶ Section 4 – Responsible Official Certification
- ▶ Appendix A – Potential Emissions for Exempt Sources
- ▶ Appendix B – Cost Analysis for RTO with VOC Concentrator

## 2. INITIAL NOTIFICATION

---

This section of the report serves as the written notification, specified in 25 Pa Code §129.115(a), that describes how NOV Fiberglass proposes to comply with the requirements in 25 Pa Code §129.111-129.115. This report is being submitted to the appropriate regional manager by December 31<sup>st</sup>, 2022 to satisfy the requirements of 25 Pa Code §129.115(a)(1).

### 2.1 Emission Unit and RACT III Compliance Strategy

The permitted VOC emission sources at the Mt. Union Plant include the following.

- ▶ York Shipley boilers (Emission Source IDs 031 and 032A),
- ▶ Emergency generator (Source ID 033),
- ▶ Controlled pyrolysis metal parts cleaning furnace (Source ID 034),
- ▶ Layup Areas #1 through #6 (Source ID 101)
- ▶ Degreasers (Source ID 103), and
- ▶ Propane space heaters.

In accordance with §129.111(a)(1), the VOC sources at the Mt. Union Plant are subject to RACT III requirements as the plant commenced operation prior to August 3, 2018.

All sources, except the Layup Areas, have a potential to emit (PTE) less than one (1) ton per year (tpy) of VOC and are therefore exempt from the RACT III requirements as per §129.111(c).

The Mt. Union Plant is submitting the following information as part of the RACT III initial notification requirements:

- ▶ 25 Pa Code §129.115(a)(1) – Submit the initial notification by December 31, 2022
  - This initial notification has been submitted prior to December 31, 2022.
- ▶ 25 Pa Code §129.115(a)(2) – Identify the air contamination sources in 25 Pa Code §129.111(a) as subject to a RACT requirement or exempt
  - See Table 2-1 below.
- ▶ 25 Pa Code §129.115(a)(3) – Identify the air contamination sources in 25 Pa Code §129.111(b) as subject to a RACT requirement or exempt
  - Not applicable, the Mt. Union Plant is an existing major source of VOC and no new NO<sub>x</sub> sources have been installed since August 3, 2018.
- ▶ 25 Pa Code §129.115(a)(4) – Identify the air contamination sources in 25 Pa Code §129.111(c) which are exempt
  - See Table 2-1 below.
- ▶ 25 Pa Code §129.115(a)(5) – Provide a description of each air contamination source listed in 25 Pa Code §129.115(a)(2) including, description, make, model and location, applicable RACT requirement, how the unit will comply with RACT III, and reason for exemption (if applicable).
  - See Table 2-1 below and the source descriptions in Section 2.2.

- ▶ 25 Pa Code §129.115(a)(6) – Provide a description of each air contamination source listed in 25 Pa Code §129.115(a)(3) including, description, make, model and location, applicable RACT requirement, how the unit will comply with RACT III, and reason for exemption (if applicable).
  - Not applicable, the Mt. Union Plant is an existing major source of VOC and is not subject to 25 Pa Code §129.115(a)(3).
  
- ▶ 25 Pa Code §129.115(a)(7) – Provide a description of each air contamination source listed in (a)(4) including, description, make, model and location and information sufficient to demonstrate that the source has a PTE less than one (1) tpy of NO<sub>x</sub> or one (1) tpy of VOC, as applicable.
  - See Table 2-1 below and potential emissions calculations in the Appendix A to this RACT Proposal.

**Table 2-1. Emission Sources at the Mt. Union Plant**

| <b>Emission Source ID From the Permit</b> | <b>Source Description</b>                         | <b>RACT III Rule Compliance Strategy</b>         |
|-------------------------------------------|---------------------------------------------------|--------------------------------------------------|
| 031                                       | York Shipley C0147 Boiler                         | Emit less than 1 tpy VOC, exempt per §129.111(c) |
| 032A                                      | York Shipley 993-888 Boiler                       | Emit less than 1 tpy VOC, exempt per §129.111(c) |
| 033                                       | Emergency generator                               | Emit less than 1 tpy VOC, exempt per §129.111(c) |
| 034                                       | Controlled pyrolysis metal parts cleaning furnace | Emit less than 1 tpy VOC, exempt per §129.111(c) |
| 101                                       | Layup Areas #1 through #6                         | Alternative RACT per §129.114(i)(1)(ii)          |
| 103                                       | Degreasers                                        | Emit less than 1 tpy VOC, exempt per §129.111(c) |
| MISC                                      | Space Heaters                                     | Emit less than 1 tpy VOC, exempt per §129.111(c) |

## 2.2 Source Descriptions and Applicable Limits

The following section provides source descriptions for each source at the Mt. Union Plant as well as the applicable Presumptive RACT III emission limits. The information provided in this section is required under 25 Pa Code §129.115(a)(5). Each of the sources listed in Table 2-1 is located within the Mt. Union Plant at 14489 Croghan Pike, Mount Union, PA 17066-8869.

### 2.2.1 Source ID 031: York Shipley C0147 Boiler

Source ID 031 is a York Shipley C0147 boiler located at the Mt. Union Plant. This boiler fires natural gas and No. 2 fuel oil and has a heat input rating of 12.5 million British thermal units per hour (MMBTU/hr).

As specified in Table 2-1, this boiler emits less than one (1) tpy of VOC and is not subject to any RACT requirements per 25 Pa Code 129.111(a)(1). Appendix A to this RACT Proposal contains supporting emissions calculations.

### **2.2.2 Source IDs 032A: York Shipley 993-888 Boiler**

Source ID 032A is a York Shipley 993-888 boiler located at the Mt. Union Plant. This boiler fires natural gas and No. 2 fuel oil and has a heat input rating of 7.328 MMBTU/hr.

As specified in Table 2-1, this boiler emits less than one (1) tpy of VOC and is not subject to any RACT requirements per 25 Pa Code 129.111(a)(1). Appendix A to this RACT Proposal contains supporting emissions calculations.

### **2.2.3 Source IDs 033: Emergency Generator**

Source ID 033 is an emergency generator. This generator fires natural gas and has a heat input rating of 0.07 MMBtu/hr.

As specified in Table 2-1, the emergency generator emits less than one (1) tpy of VOC and is not subject to any RACT requirements per 25 Pa Code 129.111(a)(1). Appendix A to this RACT Proposal contains supporting emissions calculations.

### **2.2.4 Source IDs 034: Controlled Pyrolysis Metal Parts Cleaning Furnace**

Source ID 034 is a Pollution Controls Products PTR-52 controlled pyrolysis natural gas-fired metal parts cleaning furnace.

As specified in Table 2-1, the parts cleaning furnace emits less than one (1) tpy of VOC and is not subject to any RACT requirements per 25 Pa Code 129.111(a)(1). Appendix A to this RACT Proposal contains supporting emissions calculations.

### **2.2.5 Source ID 101: Layup Areas #1 through #6**

Source ID 101 represents the layup areas. NOV operates six (6) rotating mandrels to produce the main portion of the tank shell. Prior to resin application, the molds are covered with a plastic film to facilitate removal of the tank after it is cured. Resin is stored in a 15,000 gallon outdoor steel storage tank. The mandrel application process begins when resin is pumped from intermediate resin tanks to a traveling pour trough positioned above each rotating mold. Catalyst is injected into the resin stream which is poured onto the mold, and silica sand and glass fibers are applied concurrently. This process reduces the amount of styrene emissions by reducing the surface area of coating that is exposed to the air. Only the topcoat is fully exposed to the surrounding air. Since the resin mixture is applied to the mold by pouring instead of more traditional spray methods, the emissions from this process are relatively less than those associated with the hand layup process. CSI also utilizes traditional spray application to create the end caps for each tank. End caps are fabricated by attaching molds to the ends of the appropriate mandrel.

Hand layup techniques are also used to bond tank heads and fittings onto the manufactured tanks. The company also uses hand layup techniques to produce small components for the tanks, using open molds. The chopped fibers are manually applied to the mold, wetted with catalyzed resin, and subsequently saturated with a topcoat of resin. Layers of fiber and resin are added until the desired thickness is reached. These additional layup areas are considered part of the overall layup process in the facility's Title V Operating Permit. The hand layup operations are located throughout the facility and emissions from these processes are emitted from general building ventilation points and doors.

The proposed RACT III compliance strategy for the Layup Areas is Alternative RACT pursuant to the streamlined requirements in §129.114(i)(1)(ii) as no presumptive RACT limit has been established for the Layup Area emission source. Section 3 provides the Streamlined Alternative RACT Proposal details.

### **2.2.6 Source ID 103: Degreasers**

Source ID 103 represents the three (3) cold cleaner degreasers employed at the Mt. Union Plant. Each degreaser is an immersion cold cleaning machine provided by Safety Kleen.

As specified in Table 2-1, the degreasers emit less than one (1) tpy of VOC (combined) and are not subject to any RACT requirements per 25 Pa Code 129.111(a)(1). Appendix A to this RACT Proposal contains supporting emissions calculations.

### **2.2.7 Space Heaters**

Each of the three (3) Sterling Model TF space heaters is a permitted source at the Mt. Union plant. Each space heater fires natural gas and has a heat input rating of 200,000 Btu/hr.

As specified in Table 2-1, the space heaters emit less than one (1) tpy of VOC (combined) and are not subject to any RACT requirements per 25 Pa Code 129.111(a)(1). Appendix A to this RACT Proposal contains supporting emissions calculations.

### 3. STREAMLINED ALTERNATIVE RACT PROPOSAL

NOV is proposing this Alternative RACT Proposal for Layup Areas #1 through #6 as the RACT III compliance strategy pursuant to §129.114(i)(1)(ii) as this source meets the following criteria.

- ▶ No presumptive RACT limit under 25 Pa Code §129.112 has been established for the Layup Areas emission source.
- ▶ Source emits more than 2.7 tpy of VOCs (25 Pa Code §129.114(c)).
- ▶ Plant has not modified or changed a source that commenced operation on or before October 24, 2016 (25 Pa Code §129.114(i)(1)).
- ▶ Plant has not installed and commenced operation of a new source after October 24, 2016 (25 Pa Code §129.114(i)(1)).
- ▶ Cost effectiveness associated with the RACT II emission limitation was less than \$12,000 per ton VOC (25 Pa Code §129.114(i)(2)).

Under this option, the facility asserts that the alternative RACT requirement established as RACT II Proposal is sufficient to meet RACT III requirements, specifically Pa Code §129.114(a) through (c) and (e) through (h). This RACT Proposal will demonstrate that the permit limits, established when PADEP approved the RACT II Proposal, are sufficient to demonstrate compliance with RACT III requirements at the Mt. Union Plant.

A summary of all possible controls and their feasibility is provided in Table 3-1. A summary of the technically infeasible controls is provided following the table.

**Table 3-1. Summary of Feasibility Analysis for Control Technologies for NOV RACT II Submittal**

| Control Technology        | Technical Feasibility | Economic Feasibility | RACT III Cost, if Economically Feasible (\$/ton VOC) |
|---------------------------|-----------------------|----------------------|------------------------------------------------------|
| Thermal Oxidizer          | Infeasible            | N/A                  | N/A                                                  |
| Catalytic Oxidizer        | Infeasible            | N/A                  | N/A                                                  |
| Carbon Adsorption         | Infeasible            | N/A                  | N/A                                                  |
| Low-VOC Resins            | Infeasible            | N/A                  | N/A                                                  |
| Non-Atomized Spray        | Feasible              | Feasible             | N/A                                                  |
| RTO with VOC concentrator | Feasible              | Infeasible           | \$12,052                                             |

N/A: Not applicable as technology is technically infeasible or technology is employed at the facility.

The following summarizes the findings for technically infeasible controls. There is no change to the technical feasibility assessment for any of these technologies for RACT III as compared to RACT II.

- ▶ Thermal Oxidizer: The application of traditional thermal oxidation for this type of process is challenging and would require a large energy input to maintain a feasible oxidation reaction.
- ▶ Catalytic Oxidizer: Particulate emissions associated with the mandrel process creates the potential problem of fouling the catalyst with particulate, thus reducing the efficiency of the oxidation reaction.

The prevention of fouling would require additional particulate filters and therefore require additional fan capacity to overcome the system losses.

- ▶ Carbon Adsorption: Styrene evolved from the fiberglass tank manufacturing process is potentially reactive since the resin has already been catalyzed. Once catalyzed to form a polymer, the material may clog the carbon pores, reducing capacity and bed life. The styrene recovered from the activated carbon would require further treatment and disposal.
- ▶ Low-VOC Resins: High strength, corrosion resistant resin is required during the manufacturing process. The Mt. Union Plant continues to consider but has not identified new low-VOC resin products that will allow the manufacture of tanks meeting the Underwriter's Laboratory (UL) 1316 standard.

### 3.1 Alternative RACT Determination

Pursuant to 25 Pa Code §129.114(i)(1)(ii), the case-by-case RACT limit proposal must include each of the elements required under 25 Pa Code §129.114(i)(1)(ii)(A) through (F).

*(A) 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.*

NOV reviewed the RACT/Best Available Control Technology (BACT)/Lowest Achievable Emission Rate (LAER) Clearinghouse database to identify VOC control technologies for FRP and other fiberglass manufacturing types that have been installed since 2016. All control technologies and techniques identified during this review were the same as those potentially applicable VOC control technologies identified during the RACT II analysis including:

- ▶ Thermal oxidizer,
- ▶ Catalytic oxidizer,
- ▶ Carbon adsorption, and
- ▶ Process techniques (e.g., non-atomized application techniques).

The section above, including Table 3-1 provide a summary of the analysis of each control technology.

*(B) A list of the technically feasible air cleaning devices, air pollution control technologies or techniques previously identified and evaluated under §129.92(b)(1)–(3) in the written RACT proposal submitted under §129.99(d) and approved by the Department or appropriate approved local air pollution control agency under §129.99(e).*

The technically feasible air pollution control technology identified and evaluated in the Mt. Union Plant RACT II Alternative RACT Determination was regenerative thermal oxidation (RTO) with a VOC concentrator. The economic feasibility analysis associated with this technology has been updated and is provided as Appendix B of this RACT Proposal.

*(C) A summary of the economic feasibility analysis performed for each technically feasible air cleaning device, air pollution control technology or technique listed in clause (B) and the cost effectiveness of each technically feasible air cleaning device, air pollution control technology or technique as submitted previously under §129.99(d) or as calculated consistent with the "EPA Air Pollution Control Cost Manual" (6th Edition), EPA/452/B-02-001, January 2002, as amended.*

An update to the economic feasibility analysis provided as part of the RACT II Case-by-Case Proposal of is provided in Appendix B of this RACT Proposal. The analysis considered RTO with VOC concentrator to

control VOCs associated with the layup areas and shows a cost per ton of VOC reduced of more than \$12,000.

*(D) A statement that an evaluation of each economic feasibility analysis summarized in clause (C) demonstrates that the cost effectiveness remains less than \$7,500 per ton of NOx emissions reduced or \$12,000 per ton of VOC emissions reduced.*

An updated RACT III economic feasibility analysis of using RTO with VOC concentrator to control VOCs associated with the layup areas is not less than \$12,000 per ton (see Appendix B of this RACT Proposal). Thus, NOV is asserting that the permit conditions established as part of the RACT II analysis (see Condition #001 of Section E for Source Group 06 of Title V Permit 31-05005) are sufficient to meet RACT III requirements.

*(E) A new economic feasibility analysis for each technically feasible air cleaning device, air pollution control technology or technique listed in clause (B) in accordance with §129.92(b)(4).*

No new technically feasible air cleaning devices, air pollution control technologies or air pollution control techniques were identified.

*(F) Additional information requested by the Department or appropriate approved local air pollution control agency that may be necessary for the evaluation of the analysis.*

NOV will provide additional information by the Department if requested. However, NOV asserts that the information in this Alternative RACT Proposal is sufficient as the analysis included the following required elements.

- ▶ A review of Mt. Union Plant operations that determined no new emission sources have been added to the process since 2016 and operations (e.g., material inputs, processing techniques) have not changed since 2016.
- ▶ A control technology search that indicated no new air pollution control technologies and techniques that would control VOCs associated with layup area operations have been employed since 2016.
- ▶ A cost analysis (see Appendix B of this RACT Proposal) of the technically feasible control technology option (i.e., RTO with VOC concentrator) in accordance with 6<sup>th</sup> Edition of the United States Environmental Protection Agency (EPA) Air Pollution Control Cost Manual (EPA/452/B-02-001 dated January 2002 and as amended).

#### 4. RESPONSIBLE OFFICIAL CERTIFICATION

This certification is being provided as required under 25 Pa Code §129.114(i).

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: Joe Fiore  
Signed: [Signature]

Title: HSE Specialist  
Date: 12/30/22

## **APPENDIX A. POTENTIAL EMISSIONS FOR EXEMPT SOURCES**

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**NOV Fiberglass - Mount Union, PA  
Potential to Emit - VOCs**

Natural Gas (NG) Fired Equipment

| Unit                   | Source Type    | Heat Input Rating (MMBtu/hr) | Emission Factor (lb/MMscf) | Emission Factor (lb/MMBtu) | VOC (tpy) <sup>1</sup> | Emission Factor Source        |
|------------------------|----------------|------------------------------|----------------------------|----------------------------|------------------------|-------------------------------|
| York Shipley CO147     | Boiler         | 12.5                         | 5.5                        | 0.0054                     | 0.30                   | AP-42 Section 1.4 Table 1.4-2 |
| York Shipley 993-888   | Boiler         | 7.328                        | 5.5                        | 0.0054                     | 0.17                   | AP-42 Section 1.4 Table 1.4-2 |
| Emergency Generator    | Engine         | 0.07                         | 30.2                       | 0.0296                     | 0.01                   | AP-42 Section 3.2 Table 3.2-3 |
| Parts Cleaning Furnace | Furnace/Heater | 0.357                        | 5.5                        | 0.0054                     | 0.01                   | AP-42 Section 1.4 Table 1.4-2 |

<sup>1</sup> All calculations assume 8,760 hours of operation.

Propane Fired Equipment

| Unit          | Source Type | Heat Input Rating (Btu/hr) | Fuel Rate (gal Propane/hr) | Emission Factor (lb/1,000 gal) | VOC (tpy) | Emission Factor Source        |
|---------------|-------------|----------------------------|----------------------------|--------------------------------|-----------|-------------------------------|
| Space Heaters | Heater      | 200,000                    | 2.2                        | 1.0                            | 0.01      | AP-42 Section 1.5 Table 1.5-1 |

NOTE: Calculation is for one (1) space heater. A total of three (3) space heaters are present at the Mt. Union Plant.

Degreasers

| Unit      | Source Type  | Emission Factor (tons VOC/unit) | VOC (tpy) | Emission Factor Source        |
|-----------|--------------|---------------------------------|-----------|-------------------------------|
| Degreaser | Cold cleaner | 0.33                            | 0.33      | AP-42 Section 4.6 Table 4.6-2 |

NOTE: Calculation is for one (1) space heater. A total of three (3) space heaters are present at the Mt. Union Plant.

**CALCULATION REFERENCES**

|                                    |        |         |                       |
|------------------------------------|--------|---------|-----------------------|
| NG High Heat Value                 | 1,020  | Btu/scf | AP-42 Section 1.4.1   |
| Parts Cleaning Furnace Heat Rating | 350    | scf/hr  | 1996 Title V          |
| Propane Heat Value                 | 91,500 | Btu/gal | AP-42 Section 1.5.3.1 |

## **APPENDIX B. COST ANALYSIS FOR RTO WITH VOC CONCENTRATOR**

## Cost Estimate NOV Fiberglass - Mt. Union Plant RTO with VOC Concentrator

Equipment cost estimates for a Regenerative Thermal Oxidizer (RTO) with VOC Concentrator System are adapted from a 2014 cost estimate from a vendor quote for a similar facility owned by Containment Solutions, Inc.

Cost equations are adapted from the EPA Air Pollution Control Cost Manual, Sixth Edition (Jan 2021), Section 3.2 Chapter 2, for incinerators used for VOC Control. Equations taken from the manual are referenced by equation number or table number as they appear in Section 3.2 Chapter 2 unless otherwise stated.

### Total Capital Investment (TCI)

#### Equipment Cost for Incinerators

$$EC = 2.664 \times 10^5 + 13.98 * Q_{tot}$$

(2.33)

|                                                         |                                                                                                         |                                 |
|---------------------------------------------------------|---------------------------------------------------------------------------------------------------------|---------------------------------|
| 2014 Cost Estimate Equipment Cost (EC <sub>14</sub> ) = | 2014 cost estimate at similar facility                                                                  | \$2,700,000 in 2014 dollars     |
| 2014 Cost Estimate Flow Rate (Q <sub>14</sub> ) =       | 2014 cost estimate at similar facility                                                                  | 194,942 scfm                    |
| CPI, 1998                                               | Bureau of Labor Statistics; <a href="http://www.bls.gov/cpi/#tables">http://www.bls.gov/cpi/#tables</a> | 163.0                           |
| CPI, Dec 2014                                           | Bureau of Labor Statistics; <a href="http://www.bls.gov/cpi/#tables">http://www.bls.gov/cpi/#tables</a> | 234.8                           |
| CPI, Jul 2015                                           | Bureau of Labor Statistics; <a href="http://www.bls.gov/cpi/#tables">http://www.bls.gov/cpi/#tables</a> | 238.7                           |
| CPI, Oct 2022                                           | Bureau of Labor Statistics; <a href="http://www.bls.gov/cpi/#tables">http://www.bls.gov/cpi/#tables</a> | 298.0                           |
| Total Flow Rate (Q <sub>tot</sub> ) =                   | Estimate from facility <sup>2</sup>                                                                     | 116,373 scfm                    |
| Destruction Efficiency =                                | 2014 cost estimate at similar facility                                                                  | 95%                             |
| Equipment Cost (EC) <sup>1</sup> =                      | Linearly scaled using Eq. 2.33 <sup>3</sup>                                                             | \$2,168,597 in 2022\$           |
| Auxiliary Equipment Cost (Aux) =                        | Section 2, Chapter 1 (Hoods, Ductwork & Stacks), Eq. 1.40 & 1.41 <sup>4</sup>                           | \$45,549 in 2022\$              |
| Equipment and Auxiliary Cost (A) =                      | EC + Aux =                                                                                              | \$2,214,146 in 2022\$           |
| Sales Tax =                                             | 0.06 * A (Table 2.10): Adjusted for sales tax rate in PA                                                | \$132,849 in 2022\$             |
| Freight =                                               | 0.05 * A (Table 2.10)                                                                                   | \$110,707 in 2022\$             |
| <b>Purchased Equipment Cost (PEC) =</b>                 | <b>A + Tax + Freight = 1.11A</b>                                                                        | <b>\$2,457,703 in 2022\$</b>    |
| Foundation & supports =                                 | 0.08 * PEC (Table 2.10)                                                                                 | \$196,616 in 2022\$             |
| Handling & erection =                                   | 0.14 * PEC (Table 2.10)                                                                                 | \$344,078 in 2022\$             |
| Electrical =                                            | 0.04 * PEC (Table 2.10)                                                                                 | \$98,308 in 2022\$              |
| Piping =                                                | 0.02 * PEC (Table 2.10)                                                                                 | \$49,154 in 2022\$              |
| Insulation for ductwork =                               | 0.01 * PEC (Table 2.10)                                                                                 | \$24,577 in 2022\$              |
| Painting =                                              | 0.01 * PEC (Table 2.10)                                                                                 | \$24,577 in 2022\$              |
| Direct Installation Costs (DIC) =                       | 0.30 * PEC (Table 2.10)                                                                                 | \$737,311 in 2022\$             |
| <b>Total Direct Costs (DC) =</b>                        | <b>PEC + DIC =</b>                                                                                      | <b>\$3,195,013 in 2022\$</b>    |
| Engineering =                                           | 0.10 * PEC (Table 2.10)                                                                                 | \$245,770 in 2022\$             |
| Construction and field expenses =                       | 0.05 * PEC (Table 2.10)                                                                                 | \$122,885 in 2022\$             |
| Contractor fees =                                       | 0.10 * PEC (Table 2.10)                                                                                 | \$245,770 in 2022\$             |
| Performance test =                                      | 0.01 * PEC (Table 2.10)                                                                                 | \$24,577 in 2022\$              |
| Contingencies =                                         | 0.03 * PEC (Table 2.10)                                                                                 | \$73,731 in 2022\$              |
| <b>Total Indirect Costs (IC) =</b>                      | <b>0.28 * PEC (Table 2.10)</b>                                                                          | <b>\$712,734 in 2022\$</b>      |
| <b>Total Capital Investment (TCI) =</b>                 | <b>DC + IC =</b>                                                                                        | <b>\$3,907,747.03 in 2022\$</b> |

1. 2014 vendor equipment cost estimate included instrumentation and start-up costs as part of the cost estimate, therefore these additional costs have not been accounted for in the Total Capital Investment calculations.

2. Volumetric flowrate from the exhaust system assumed to be at approximately standard conditions of 77 F and 1 atm of pressure as stated in the EPA Air Pollution Control Cost Manual, Sixth Edition, Section 3.2 Chapter 2 (Section 2.4.1). Therefore ACFM = SCFM.

3. Equation for equipment cost is linearly dependent on flow rate from 10,000 scfm to 100,000 scfm. This equation is used to scale the cost of the incinerator based on the 2014 cost estimate for a similar facility with a flow rate outside of this range. The linear relationship is assumed to extend beyond the given range of flow rates since a more appropriate method is not available.

4. Assumes 600 ft. of 3-ft. diameter circular longitudinal sheet-galvanized CS ducting and 9 insulated galvanized CS elbows.

## Annual Costs

### Direct Annual Costs (DAC)

$$\text{DAC} = (\text{Annual Electricity Cost}) + (\text{Annual Fuel Cost}) + (\text{Annual Labor and Materials})$$

|                                             |                                                    |                            |
|---------------------------------------------|----------------------------------------------------|----------------------------|
| Annual Electricity Cost at 90% uptime =     | $90\% \times 8760 \times p_e \text{ kW} =$         | \$137,930.98 in 2022\$     |
| Electricity price in PA ( $p_e$ ) =         | U.S. Energy Information Administration             | \$0.0928 \$/kWh            |
| Total Flow Rate ( $Q_{\text{tot}}$ ) =      | Estimate from facility <sup>1</sup>                | 116,373 acfm               |
| Electricity Use (kW) =                      | Scaled from 2014 cost estimate at similar facility | 189 kW                     |
| Annual Fuel Cost at 90% uptime =            | $90\% \times 8760 \times p_f \times G =$           | \$255,867.46 in 2022\$     |
| Fuel price of Natural Gas in PA ( $p_f$ ) = | U.S. Energy Information Administration             | \$12.31 \$/mscf            |
| Fuel Use (G) =                              | Scaled from 2014 cost estimate at similar facility | 2.636 mscf/hr              |
| Operator Labor Unit Cost                    | Site-specific direct labor rate                    | \$38.52 in 2022\$          |
| Operator Labor                              | 0.5 hr/shift, 8 hr shift all year                  | \$21,089.70 in 2022\$      |
| Supervisor Labor                            | Table 2.12, 15% of operator                        | \$3,163.46 in 2022\$       |
| Maintenance Labor Unit Cost                 | Site-specific direct labor rate                    | \$41.53 in 2022\$          |
| Maintenance Labor                           | 0.5 hr/shift, 8 hr shift all year                  | \$22,737.68 in 2022\$      |
| Maintenance Materials                       | Table 2.12, 100% of maintenance labor              | \$22,737.68 in 2022\$      |
| <b>Direct Annual Cost (DAC) =</b>           |                                                    | <b>\$463,527 in 2022\$</b> |

### Indirect Annual Cost (IDAC)

$$\text{IDAC} = \text{Overhead} + \text{Administrative Charges} + \text{Property Taxes} + \text{Insurance} + \text{Capital Recovery Costs}$$

|                                      |                                             |                            |
|--------------------------------------|---------------------------------------------|----------------------------|
| Overhead =                           | 60% of total labor and maint. (Table 2.12)  | \$41,837 in 2022\$         |
| Administrative Charges =             | $0.02 \times \text{TCl}$ (Table 2.12)       | \$78,155 in 2022\$         |
| Property Taxes =                     | $0.01 \times \text{TCl}$ (Table 2.12)       | \$39,077 in 2022\$         |
| Insurance =                          | $0.01 \times \text{TCl}$ (Table 2.12)       | \$39,077 in 2022\$         |
| Capital Recovery =                   | $\text{CRF} \times \text{TCl}$ (Table 2.12) | \$367,328 in 2022\$        |
| <b>Indirect Annual Cost (IDAC) =</b> |                                             | <b>\$565,475 in 2022\$</b> |

### Total Annual Cost (TAC)

$$\text{TAC} = \text{Direct Annual Costs} + \text{Indirect Annual Costs}$$

|                                   |                     |                              |
|-----------------------------------|---------------------|------------------------------|
| Direct Annual Costs (DAC) =       |                     | \$463,527 in 2022\$          |
| Indirect Annual Costs (IDAC) =    |                     | \$565,475 in 2022\$          |
| <b>Total Annual Costs (TAC) =</b> | <b>DAC + IDAC =</b> | <b>\$1,029,002 in 2022\$</b> |

## Cost Effectiveness

$$\text{Cost Effectiveness} = \text{Total Annual Cost} / \text{VOC Removed/year}$$

|                             |                                                     |
|-----------------------------|-----------------------------------------------------|
| Total Annual Cost (TAC) =   | \$1,029,002 per year in 2022\$                      |
| VOC Removed =               | 85 tons/year <sup>2</sup>                           |
| <b>Cost Effectiveness =</b> | <b>\$12,052.12 per ton of VOC removed in 2022\$</b> |

1. Volumetric flowrate from the exhaust system assumed to be at approximately standard conditions of 77 F and 1 atm of pressure as stated in the EPA Air Pollution Control Cost Manual, Seventh Edition, Section 3.2 Chapter 2 (Section 2.4.1). Therefore  $\text{ACFM} = \text{SCFM}$ .

2. VOC removed estimated based on 91% of total resin throughput used in the mandrel and end cap production areas, an estimated emissions capture efficiency of 85% and an estimate RTO uptime of 90%.

**DATE COMPLETED: December 2, 2022**



**MEMO**

**FROM:** Hilary Le *HLe 7/10/18*  
New Source Review Section

**TO:** William R. Weaver *WRW 7/12/18*  
Air Program Manager

**DATE:** July 10, 2018

**RE:** Containment Solutions, Inc. / Mount Union Plant  
Title V Operating Permit Significant Modification No. 31-05005  
RACT 2 Case-by-Case Evaluation  
Shirley Township, Huntingdon County

***Addendum***

A copy of the proposed subject RACT 2 Case-by-Case Evaluation Title V operating permit modification was e-mailed to Mr. John Cormas, Process Engineer, Containment Solutions, Inc.; and Mr. John Pipta, DEP Altoona District Supervisor on 4/19/18 to allow for a 15-day comment period. No comments were received from Mr. Cormas or Mr. Pipta.

A copy of the proposed RACT 2 Case-by-Case Evaluation Title V operating permit modification and technical review memo were e-mailed to Ms. Leslie Jones of EPA on 5/2/18 to allow for a 45-day comment period.

On 6/20/18, Ms. Mary Cate Opila, P.E., Ph.D., EPA Region III, had some comments.

1. RACT II requirements should include citations to the relevant sections of the Pa Code (e.g. 25 Pa. Code § 129.96- § 129.100).
2. Unless explicitly removed from the State Implementation Plan (SIP), any RACT I requirements will remain in effect after the RACT II requirements take effect. Please ensure that the note on permit page 71 does not alleviate any applicable requirements contained in the SIP or that the SIP submittal clearly requests removal of RACT I requirements.

In response to EPA's comments, the regulatory citation has been added to the beginning of Group 06 in the permit, and a statement regarding RACT 1 supersedure has also been added to the end of Group 06.

On 6/21/18, the updated permit sent to Ms. Opila. She concurred with the revised permit the same day.

The "Notice of Intent to Issue" Public Notice was published in The Daily News, a newspaper of general circulation in Huntingdon County on 5/9/18.

Notice of the Department's intent to issue the operating permit was published in the *Pennsylvania Bulletin* on May 19, 2018.

Opportunity was provided for a public hearing on the proposed SIP and permit action on 6/21/18. No persons showed up to testify. The public comment period was advertised as lasting 10 days after the hearing. No public comments have been received.

***Conclusions and Recommendations***

All requirements have been met and I recommend the RACT 2 Case-by-Case Evaluation Title V Operating Permit No. 31-05005 modification be issued.

cc: SCRO, B 1, Huntingdon Co., No. 31-05005 / Altoona District / EPA Region III



MEMO

FROM: Hilary Le Hle 4/13/18  
New Source Review Section

TO: William R. Weaver *WRW 4/14/18*  
Air Program Manager

THRU: Viren Trivedi, P.E. *VT 4/18/18*  
Chief Program Manager, Southcentral Regional Office

DATE: April 13, 2018

RE: Containment Solutions, Inc. / Mount Union Plant  
Title V Operating Permit Significant Modification No. 31-05005  
RACT 2 Case-by-Case Evaluation  
Shirley Township, Huntingdon County

### ***Background/Facility Description***

Containment Solutions, Inc. (CSI) currently operates the facility in Huntingdon County under Title V operating permit No. 31-05005. Title V OP was issued on November 3, 2015 and expires on March 31, 2021.

The Mount Union plant manufactures Fiberglass Reinforced Plastic (FRP) underground storage tanks for the petroleum distribution industry and various other industrial users. These tanks are used for oil and gasoline storage, potable and non-potable water, and oil/water separation. CSI manufactures storage tanks using a FRP open molding process, which includes six molding stations (mandrels), as well as hand layup and resin spraying activities.

### ***RACT 2 Applicability***

On April 23, 2016 the Environmental Quality Board, Finalized Additional RACT Requirements for Major Sources of NO<sub>x</sub> and VOC (RACT 2) under 25 Pa Code §§ 129.96 – 129.100.

The statewide RACT 2 applicability thresholds for NO<sub>x</sub> and VOC are 100 and 50 tons per year (tpy) per facility, respectively. As per 25 Pa. Code §129.99(b) and (c), the RACT proposal must be submitted to DEP by October 24, 2016. On October 21, 2016, CSI submitted Title V Operating Permit Significant Modification application to address RACT 2 requirements. CSI is not a major source of NO<sub>x</sub> and therefore is not subject to any of the NO<sub>x</sub> RACT requirements of the rule. CSI is considered a major source of VOCs and therefore is subject to the VOC RACT 2 related requirements of the rule.

### ***Sources***

Title V permit includes the following sources:

| Source ID | Name                                                                                                         |
|-----------|--------------------------------------------------------------------------------------------------------------|
| 031       | York-ShIPLEy CO147, natural gas/No. 2 oil-fired, rated at 12.5 mmBtu/hr, installed 1/1970                    |
| 032A      | York-ShIPLEy 993-888, model 560-S3D-175X-S150-N, NG/#2 oil-fired, rated at 7.328 mmBtu/hr, installed 7/28/14 |
| 033       | Onan Emergency Generator, model 50CCK3, natural gas-fired, rated at 0.07 mmBtu/hr, installed 1971            |
| 034       | Control Pyro Metal Parts Cleaning Furnace, natural gas-fired, rated at 300,000 Btu, installed 12/1991        |
| 101       | Layup Area (ID #1, #2, #3, #4, #5, & # 6), installed 2/1989                                                  |
| 103       | Degreasers                                                                                                   |

The insignificant activities for this facility listed on Section H-Miscellaneous include: fitting fabrication area (exhausts inside building), and five propane fired space heaters.

Source ID 101 Description:

CSI's RACT proposal describes Source 101 as follows:

CSI operates six (6) rotating mandrels to produce the main portion of the tank shell. Prior to resin application, the molds are covered with a plastic film to facilitate removal of the tank after it is cured. Resin is stored in a 15,000 gallons outdoor steel storage tank. The mandrel application process begins when resin is pumped from intermediate resin tanks to a traveling pour trough positioned above each rotating mold. Catalyst is injected into the resin stream which is poured onto the mold, and silica sand and glass fibers are applied concurrently. This process reduces the amount of styrene emissions by reducing the surface area of coating that is exposed to the air. Only the top coat is fully exposed to the surrounding air. Since the resin mixture is applied to the mold by pouring instead of more traditional spray methods, the emissions from this process are relatively less than those associated with the hand layup process. CSI also utilizes traditional spray application to create the end caps for each tank. End caps are fabricated by attaching molds to the ends of the appropriate mandrel.

Hand layup techniques are also used to bond tank heads and fittings onto the manufactured tanks. The company also uses hand layup techniques to produce small components for the tanks, using open molds. The chopped fibers are manually applied to the mold, wetted with catalyzed resin and subsequently saturated with a topcoat of resin. Layers of fiber and resin are added until the desired thickness is reached. These additional layup areas are considered part of the overall layup process in the facility's Title V Operating Permit. The hand layup operations are located throughout the facility and emissions from these processes are emitted from general building ventilation points and doors.

The primary emissions from processes at the Mt. Union plant are VOC, with a major constituent of styrene, that are emitted from the resin during application to the mold and during the resin curing process. Styrene is listed as a hazardous air pollutant (HAP) in Section 112(b) of the Clean Air Act. A ventilation duct is positioned above each mandrel to vent the processing area. The exhaust stream is combined before being emitted to the atmosphere from one of three stacks, each with a dedicated fan. CSI estimates that approximately 91% of the total resin processed by the Mt. Union plant is used in the mandrel and end cap application areas. The remaining 9% is used in the hand layup areas.

***Emissions***

The actual facility VOC and HAP emissions tons per year (tpy) reported in AIMS are as follow.

|            | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  |
|------------|-------|-------|-------|-------|-------|-------|-------|
| VOC (tpy)  | 42.65 | 58.08 | 68.63 | 73.94 | 69.35 | 76.77 | 70.89 |
| HAPs (tpy) | 42.62 | 58.02 | 68.62 | 73.89 | 69.30 | 76.70 | 70.83 |

Styrene emissions are calculated based on an emission factor of 2% of resin weight processed. This factor, per the company's RACT 2 technical deficiency response letter dated 8/31/17 "is based on site-specific stack testing that was performed by one of the facility's previous owners in October 1987. The results of the emissions testing showed an average styrene emission rate of 1.5% per pound of resin, and VOC emissions from the process consist primarily of styrene. An emission factor of 2% was adopted to conservatively account for emissions from areas other than the main layup areas. The current process utilized by Containment Solutions remains essentially the same as the process from 1987, and therefore Containment Solutions believes this emission factor is still appropriate."

In response to further inquiry by DEP, CSI on 3/8/18, provided additional testing data from its facility in Bakersfield, CA. As noted by CSI in this submission, "Per our discussion during the conference call, we looked for a recent stack test(s) from one of our sister plants (who all use the same process, raw materials and manufacture to the same UL specifications). Our Bakersfield, CA plant did some testing in November 2013. Their 3 mandrels are classified into two separate areas by the CA DEP (mandrels 1 & 2 into "Line 1" and mandrel 3 into "Line 2" due to their air permit requirements). They ran 1 workstation per trial per stack. The results were a VOC emission of 1.64% and 2.44% by resin weight (please see attached report)." Based on this information, DEP concludes that the emission factor being used at Mount Union is reasonable.

**RACT 2**

Exempted Sources:

In accordance with 25 Pa Code §129.96(c), sources with a potential to emit one (1) tpy or less of VOC are exempt from the RACT 2 VOC requirements. The following sources meet RACT 2 exemption criteria:

| Source ID     | Source Description                        | VOC RACT 2 status | PTE VOC (tpy) |
|---------------|-------------------------------------------|-------------------|---------------|
| 031           | York-Shipley CO147                        | exempt            | Less than 1   |
| 032A          | York-Shipley 993-888                      | exempt            | Less than 1   |
| 033           | Onan Emergency Generator                  | exempt            | Less than 1   |
| 034           | Control Pyro Metal Parts Cleaning Furnace | exempt            | Less than 1   |
| 103           | Degreasers                                | exempt            | Less than 1   |
| Misc. Section | Propane fired space heaters (5)           | exempt            | Less than 1   |

Presumptive RACT 2 Sources:

The facility has not proposed any source meeting presumptive RACT 2 requirements.

Alternative RACT 2 Sources:

Essentially all of the facility’s VOC emissions are from Source 101, and are also HAPs (mostly styrene). Potential VOC emissions from this source are listed as 129.1 tpy, based on permitted annual resin throughput of 12,910,000 pounds and a site-specific emission factor of 2% of VOC emitted per pound of resin. The company has proposed Source ID 101, Layup Area (ID #1, #2, #3, #4, #5, & # 6) as subject to alternative RACT 2 (a case-by-case) requirements since this category is not included in the source categories for which the regulations include presumptive RACT VOC limits. (25 Pa Code §129.99)

DEP reviewed the company’s Source 101 RACT 2 determination and sent a technical deficiency letter on 6/13/17. On 7/3/17, CSI requested for an extension to provide responses to the DEP’s requests. DEP approved this request via an email from Mr. William Weaver on 7/6/17. CIS provided responses to the technical deficiencies on 9/1/17. On 3/8/18, CSI provided additional testing data from a similar facility in support of the emission factor used at the Mount Union facility.

VOCs RACT 2 assessment for Source ID 101:

CIS identified the following VOCs add-on control technologies:

| Control Option   | CSI’s evaluation of Control Option                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | CSI deems option technically feasible? | DEP concurs? |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|--------------|
| Thermal Oxidizer | <p>Due the nature of CSI's operations, air from the main mandrel areas is exhausted at a high flowrate, with a low concentration of VOC. The application of traditional thermal oxidation for this type of process is challenging, and would require a large energy input to maintain a feasible oxidation reaction. The RBLC does not indicate that direct flame thermal oxidation has been implemented on any similar process types. Further, 40 CFR Subpart WWWW does not conclude that any add-on controls are considered MACT for the FRP process.</p> <p>However, a potentially feasible thermal oxidation process is available, which utilizes a VOC concentrator prior to a traditional RTO system. The RBLC lists an RTO system with a VOC concentrator for facility in a similar industry, although this facility manufactures different products utilizing a different molding technique from the Mt. Union plant. The VOC concentrator in this type of system consists of a zeolite adsorption media, which removes up to 95% of the VOCs from the exhaust stream. The VOC are then desorbed from</p> | Yes                                    | Yes          |

| Control Option     | CSI's evaluation of Control Option                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | CSI deems option technically feasible? | DEP concurs? |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|--------------|
|                    | the media using a high temperature, low volume gas stream, and are oxidized using a RTO. By concentrating the VOCs, a more efficient oxidation process is possible on the lower volume gas stream with a higher concentration of VOCs. This type of technology is technically feasible for CSI's FRP process.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                        |              |
| Catalytic Oxidizer | To employ catalytic oxidation on FRP processes at CSI, the high volume of gas collected by the exhaust vents would require multiple oxidizers for each stack. In addition, the particulate emissions associated with the mandrel process creates the potential problem of fouling the catalyst with particulate, thus reducing the efficiency of the oxidation reaction. The prevention of fouling would require additional particulate filters and therefore require additional fan capacity to overcome the system losses. The RBLC does not list catalytic oxidation for FRP processes in the database, and the applicable NESHAP Subpart WWWW does not conclude that any add-on controls are considered MACT. CSI considers this technology to be technically infeasible and eliminates catalytic oxidation as RACT. Further evaluation of the technology is not required.                               | No                                     | Yes          |
| Carbon Adsorption  | Similar to catalytic oxidation, exhausting the high-volume gas stream into a potential carbon adsorption unit would require pre-filtering for particulate matter. In addition, the styrene evolved from the fiberglass tank manufacturing process is potentially reactive since the resin has already been catalyzed. Once catalyzed to form a polymer, the material may clog the carbon pores, reducing capacity and bed life. The styrene recovered from the activated carbon would require further treatment and disposal. The RBLC does not list carbon adsorption for FRP processes in the database, and the applicable NESHAP Subpart WWWW does not conclude that any add-on controls are considered MACT. Therefore, CSI believes carbon adsorption to be technically infeasible for the FRP process, and eliminates carbon adsorption as RACT. Further evaluation of the technology is not required. | No                                     | Yes          |
| Process Changes    | <p>The current practices utilized by CSI on the main mandrel processing areas have been implemented in order to minimize VOC emissions. CSI utilizes a pour technique to apply resin to the spinning mandrel, rather than using an atomized spray process. The pour method reduces the volatilization of VOCs from the resin, thus reducing overall emissions. In addition, CSI uses non-solvent based clean-up solution, therefore further reducing the potential for VOC emissions.</p> <p>The use of resin with a lower VOC content is a possible change that could be implemented to further reduce potential VOC emissions. However, CSI is limited in what resins are available to manufacture the products produced at the Mt. Union plant. CSI's process uses corrosion-resistant, high strength resin. This is necessary for the tank</p>                                                           | No                                     | Yes          |

| Control Option         | CSI's evaluation of Control Option                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | CSI deems option technically feasible? | DEP concurs? |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|--------------|
|                        | walls to be resistant to fuels including alcohols. These tanks are Underwriter's Laboratory (UL) 1316 listed for this application. To obtain that listing, tank samples must be tested by UL under fuel exposure and meet specific minimum property requirements. As a result, CSI is limited to manufacturing UL 1316 listed tanks with resins approved by UL. When the resin cures, the styrene in the resin is used in the polymerization to develop the full cross linking of the polymer that yields the required corrosion-and-fuel-resistant properties. Therefore, CSI believes that there are not additional process changes that can be implemented or that are technically feasible for the FRP process, and eliminates process changes as RACT. |                                        |              |
| Refrigerated Condenser | This technology has not "been commercially demonstrated on FRP processes similar to those at the Mt. Union plant" and has been deemed technically infeasible.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | No                                     | Yes          |
| Flare                  | This technology has not "been commercially demonstrated on FRP processes similar to those at the Mt. Union plant" and has been deemed technically infeasible.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | No                                     | Yes          |

Of the control options noted above, only thermal oxidation was deemed to be technically feasible. Therefore, CSI performed a cost analysis of this option. CSI concludes that "Traditional thermal oxidation systems would require substantial supplemental fuel to be used in order to maintain the required oxidation temperature, making an RTO system a more cost effective potential control method for this type of low VOC/high flowrate process. Due to the difficulty in estimating actual VOC concentrations in the exhaust stream, calculations were not performed to estimate annual fuel costs for the RTO. Even without accounting for supplemental fuel costs, the estimated cost effectiveness of an RTO is approximately \$13,379 per ton of VOC controlled. Therefore, thermal oxidation through the use of an RTO is not cost effective and is not RACT for this process." DEP concurs with this assessment.

#### **RACT 1 requirements:**

The facility was issued RACT 1 Permit No. 31-02005 on 4/9/99. This permit was incorporated into the PA SIP on 08/06/01, at 66 FR 40891. The requirements of the RACT 1 permit are still relevant and applicable, and DEP recommends that they be transferred to the RACT 2 case-by-case approval for Source 101, along with additional requirements that will be added. See attached spreadsheet detailing the current RACT 1 provisions for this facility.

#### **RACT 2 case-by case conclusion for Source 101:**

In view of the above discussion, DEP has determined that the current VOC control technology/work practices, e.g., pour application technique and non-solvent based cleansing solutions, including the provisions in the current RACT 1 permit, appear to be key RACT 2 measures for minimizing VOC. The MACT standards of NESHAP Subpart WWWW are also applicable with regard to overall VOC emissions, since almost all the VOC emitted at the facility consists of styrene which is regulated by Subpart WWWW.

*CSI has additionally proposed the following recordkeeping and reporting requirements for Source 101 for RACT 2. These requirements already appear in the current Title V permit in Section D for Source 101:*

#### **Recordkeeping:**

1. Manufacturer supplied VOC Data sheets and/or Material Safety Data Sheets (MSDS) for all resins applied at this facility within the most recent five (5) years shall be maintained at the above location and shall be made available to the Department at any time.
2. The permittee shall maintain the daily records of the following information for the layup areas:

- a) resin identification;
- b) daily resin use in gallons and pounds;
- c) pounds per month of resin used;
- d) pounds of VOC emissions per month from resin use;
- e) hours of operation.

These records shall be maintained on-site for a minimum of five (5) years and shall be made available upon the Department's request.

*Reporting:*

Annual reports containing, but not limited to, the following data shall be submitted to DEP for all resins used by the layup area operations:

- a) resin identification;
- b) pounds per month of resin used;
- c) pounds of VOC and HAP (Styrene) emissions per month from resin use;
- d) hours of operation each month.

The report for January 1 through December 31 is due no later than March 1 of the following year for each operating year authorized by the operating permit.

*Changes to permit:*

The following changes are proposed for the facility's Title V permit:

**Page 1:** Changed Responsible Official from John Rabel to T.J. Myers.

**Section D, Source 101:** Moved Conditions # 001 - # 002 and # 005 - # 008 to new Group 06 RACT 2 Requirements.

**Section D, Source 101:** Deleted Condition # 004 because CSI does not use the same resin across different operations.

**Section E:** Added new Group 05 RACT 1 Requirements, along with a sunset provision once the RACT 2 requirements are SIPed.

**Section E:** Added new Group 06 RACT 2 Requirements.

I recommend Title V Operating Permit No. 31-05005 Modification be distributed to the applicant for comment.

cc: SCRO, B 1, Huntingdon Co., No. 31-05005 / EPA, Region III / Altoona District

**Containment Solutions (Mount Union)**  
**Proposed RACT 1 Changes**

| RACT Operating Permit No. 31-02005 SIP requirements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Proposed Adjustment of RACT 1 SIP requirement for RACT 2                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| <p>The VOC emissions from this facility result from the application and use of VOC containing resins on the five large production layup mandrels, two small (48" diameter) layup mandrels, along with the end cap, submold fitting, and tank assembly areas. These workstations, engaged in the production of fiberglass reinforced plastic (FRP) tanks, have been designated as the source. Emissions from the layup mandrels, the cap, submold, and fitting areas are vented through three exhaust stacks while emissions from the assembly area are vented through various small roof vents throughout the facility. No VOC control device is necessary or appropriate.</p> |                                                                                                                                 |
| <p>1. The source and any associated air cleaning devices are to be:</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>Delete: The O&amp;M requirements in this condition will be included in the case-by-case RACT 2 approval for this source.</p> |
| <p>a. operated in such a manner as not to cause air pollution;</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <p>See above</p>                                                                                                                |
| <p>b. in compliance with the specifications and conditions of the Reasonably Available Control Technology (RACT) plan;</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p>See above</p>                                                                                                                |
| <p>c. operated and maintained in a manner consistent with good operating and maintenance practices.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>See above</p>                                                                                                                |
| <p>2. This permit is valid only for the specific equipment, location and owner named above.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <p>See above</p>                                                                                                                |
| <p>4. The total facility resin use shall not exceed 12,910,000 pounds during any consecutive 12-month period.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <p>Delete: This restriction will be included in the case-by-case RACT 2 approval for this source.</p>                           |
| <p>5. The resin pouring layup method of tank fabrication, as described in the application, shall be employed during the fabrication of the cylindrical tank shells while operating the five large production layup mandrels.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                               | <p>Delete: This restriction will be included in the case-by-case RACT 2 approval for this source.</p>                           |
| <p>4. Solvent-based resin cleanup solutions shall not be used at this facility.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <p>Delete: This restriction will be included in the case-by-case RACT 2 approval for this source.</p>                           |
| <p>5. The production activities, at this facility, shall not exceed 8,736 hours during any consecutive 12-month period.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <p>Delete: This restriction will be included in the case-by-case RACT 2 approval for this source.</p>                           |
| <p>6. Annual resin consumption and VOC emission reports shall be submitted to the Altoona District Supervisor. Each report (January 1 through December 31) is due no later than March 1 of the following year for each operating year authorized by the operating permit or its renewal</p>                                                                                                                                                                                                                                                                                                                                                                                    | <p>Delete: This restriction will be included in the case-by-case RACT 2 approval for this source.</p>                           |
| <p>7. Manufacturer-supplied VOC Data Sheets and/or Material Safety Data Sheets for all resins utilized at the facility within the most recent two years shall remain at the above location and be made available to the Department at any time.</p>                                                                                                                                                                                                                                                                                                                                                                                                                            | <p>Delete: This restriction will be included in the case-by-case RACT 2 approval for this source.</p>                           |
| <p>8. Records shall be maintained in accordance with 25 Pa. Code Section 129.95.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <p>Delete: This restriction will be included in the case-by-case RACT 2 approval for this source.</p>                           |