

**BUREAU OF AIR MANAGEMENT
NEW SOURCE REVIEW PERMIT
TO CONSTRUCT AND OPERATE A STATIONARY SOURCE**

Issued pursuant to Title 22a of the Connecticut General Statutes (CGS) and Section 22a-174-3a of the Regulations of Connecticut State Agencies (RCSA).

Owner/Operator	FuelCell Energy, Inc.
Address	539 Technology Park Drive, Torrington, CT 06790
Equipment Location	539 Technology Park Drive, Torrington, CT 06790
Equipment Description	Tape Caster 3 (TC-3) with a Regenerative Thermal Oxidizer (RTO) System
Town-Permit Numbers	183-0102
Premises Number	171
Stack Number	04
Permit Issue Dates	
Expiration Date	None

Katherine S. Dykes
Commissioner

Date

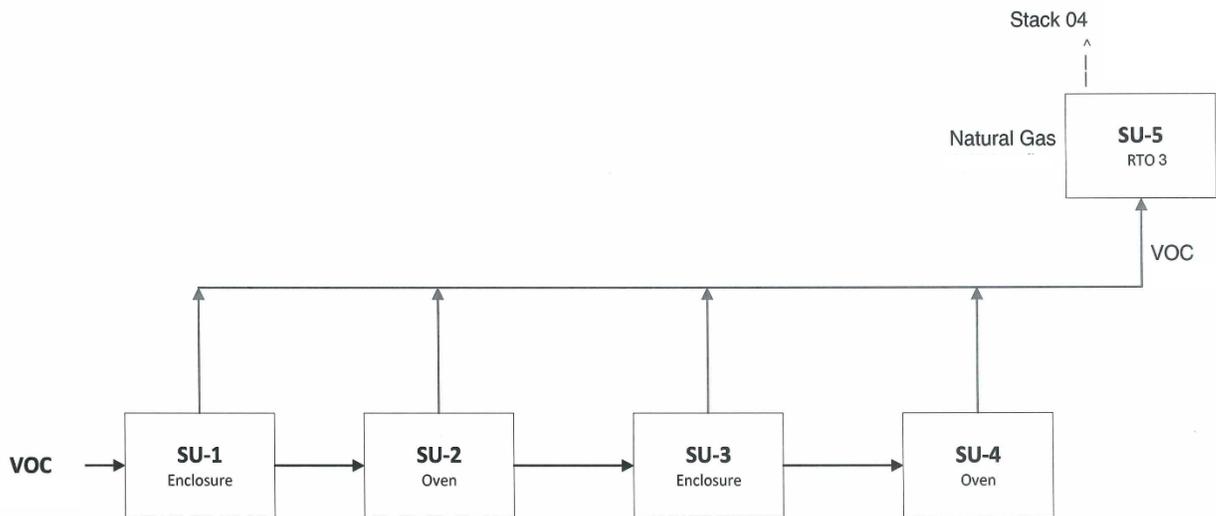
This permit specifies necessary terms and conditions for the operation of this equipment to comply with state and federal air quality standards. The Permittee shall at all times comply with the terms and conditions stated herein.

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PART I. DESIGN SPECIFICATIONS

A. General Description

Tape Caster 3 is a single emission unit (U3) which consists of five (5) subunits, designated SU1, SU2, SU3, SU4, and SU5. Subunit 1 and 3 are enclosures (accumulators), Subunits 2 and 4 are electric ovens, and Subunit 5 is a regenerative thermal oxidizer (RTO) which collects and destroys the VOCs generated at the tape caster line. The line is being designed with 100% capture of VOCs to the RTO and 95% destruction in the RTO.



B. Equipment Design Specifications

Tape Caster (TC-3)

1. Design Maximum VOC/HAP Solvent Load: 93.3 lb/hr
2. Processing Rates: 4 hrs/batch, 6 batches/day

C. Control Equipment Design Specifications

Regenerative Thermal Oxidizer (RTO)

1. Make: ADWEST
2. Model No.: 10.0 RTO 95
3. Fuel Type: Natural Gas
4. Maximum Rated Capacity: 2.980 MMBtu/hr
5. Maximum Fuel Firing Rate: 2980 ft³/hr

D. Stack Parameters

1. Minimum Gas Flow Rate: 10,527 acfm
2. Minimum Distance to Property Line: 88 feet

3. Minimum Stack Height: 40 feet

PART II. OPERATIONAL CONDITIONS

A. Operating Parameter Limitations

1. Equipment: Tape Caster (TC-3)
 - a. Maximum VOC/HAP solvent load: 93.3 lb/hr
 - b. Maximum VOC/HAP solvent load in any consecutive 12 month period: 93.3 tons
2. Controls: Regenerative Thermal Oxidizer (RTO)
 - a. Minimum Operating Temperature of Combustion Chamber: 1450°F
 - b. Capture Efficiency: 100%
 - c. Minimum Overall Control Efficiency: 95%
 - d. Fuel Type: Natural Gas
 - e. Maximum Annual Fuel Usage: 26.1 MMft³

B. O&M Requirements

1. The RTO System shall be operated and maintained in accordance with any and all written instructions or recommendations by the manufacturer.
2. The RTO System shall be in use at all times Tape Caster (TC-3) is in operation.

PART III. ALLOWABLE EMISSION LIMITS

The Permittee shall not cause or allow this equipment to exceed the emission limits stated herein at any time.

A. Criteria Pollutants

1. Emissions due to Manufacturing (TC-3)

Pollutant	lb/hr	tpy
VOC	4.66	4.66

2. Emissions due to Natural Gas Combustion (RTO)

Pollutant	lb/hr	tpy
PM	0.023	0.099
PM ₁₀	0.023	0.099
PM _{2.5}	0.023	0.099
SO ₂	0.002	0.008
NO _x	0.30	1.31
VOC	0.02	0.07
CO	0.25	1.10

3. The emissions from any new compounds, for production or trial runs, shall be counted toward any applicable emissions limits in this permit.

B. Hazardous Air Pollutants

1. The Permittee shall not cause or allow the emission of any individual air pollutant listed in section 112(b)(1) of the Act, inclusive of deletions and additions set out in 40 CFR Part 63, Subpart C, as may be amended from time to time, to exceed 10 tpy from the premises.
2. The Permittee shall not cause or allow the emission of any combination of air pollutants listed in section 112(b)(1) of the Act, inclusive of deletions and additions set out in 40 CFR Part 63, Subpart C, as may be amended from time to time, to exceed 25 tpy from the premises.
3. This equipment shall not cause an exceedance of the Maximum Allowable Stack Concentration (MASC) for any hazardous air pollutant (HAP) emitted and listed in RCMA Section 22a-174-29. [STATE ONLY REQUIREMENT]

C. Demonstration of compliance with the above emission limits may be met by calculating the emission rates using emission factors from the following sources:

- Manufacturer's Data
- Material Balance
- AP-42, 1.4 Natural Gas Combustion, Supplement D, July 1998.

The commissioner may require other means (e.g. stack testing) to demonstrate compliance with the above emission limits, as allowed by state or federal statute, law or regulation.

PART IV. MONITORING, RECORD KEEPING AND REPORTING REQUIREMENTS

A. Monitoring

1. The Permittee shall monitor the quantity of each coating utilized in the tape caster (TC-3) in units of pounds.
2. The Permittee shall monitor the hours of operation with each coating utilized.
3. The Permittee shall calculate VOC/HAP loading to the unit in lb/hr based on VOC/HAP wt% for each coating utilized.
4. The Permittee shall continuously monitor fuel consumption of the RTO using a non-resettable totalizing fuel meter.
5. The Permittee shall operate a continuous monitoring and record keeping system which continuously measures and records the RTO's combustion temperature. The Permittee shall calibrate or replace the thermocouple annually.
6. The Permittee shall perform inspections of the RTO system at least once a year.
7. The Permittee shall perform maintenance on the RTO system as recommended by the manufacturer.

B. Record Keeping

1. The Permittee shall keep records of the quantity of each coating utilized in TC-3 each hour in units of pounds.

2. The Permittee shall keep records of the hours of operation with each coating applied to TC-3.
3. The Permittee shall keep records of the calculations VOC/HAP loading to TC-3 in lb/hr based on VOC/HAP wt% of each coating utilized.
4. The Permittee shall keep records of monthly and consecutive 12 month fuel consumption. The consecutive 12 month fuel consumption shall be determined by adding the current month's fuel consumption to that of the previous 11 months. The Permittee shall make these calculations within 30 days of the end of the previous month.
5. The Permittee shall keep records total VOC and of all HAP compounds contained in the solvents used in TC-3. This HAP compound record shall be updated monthly. These records shall include the MSDS's or technical data sheets (TDS) or safety data sheets. Such information shall include the quantity and type of each HAP contained in the solvents. For paperwork reduction, these sheets may be kept on computer file in electronic form and access to above paperwork requirement may also be allowed via internet on-demand.
6. The Permittee shall make and maintain calculations of Actual Stack Concentration (ASC) and Maximum Allowable Stack Concentration (MASC) for all HAPs emitted and listed in RSCA Section 22-174-29 used in TC-3.
7. The Permittee shall keep records of the RTO combustion chambers' temperature in °F.
8. The Permittee shall keep records of the annual inspection of the RTO system.
9. The Permittee shall keep records of the maintenance of the RTO system.
10. The Permittee shall calculate and record the monthly and consecutive 12 month VOC/HAP emissions for TC-3 in units of tons. The consecutive 12 month emissions shall be determined by adding the current month's emissions to that of the previous 11 months. Such records shall include a sample calculation for each pollutant. The Permittee shall make these calculations within 30 days of the end of the previous month.
11. The Permittee shall calculate and record the monthly and consecutive 12 month PM, PM₁₀, PM_{2.5}, SO₂, NO_x, VOC, and CO emissions for the RTO in units of tons. The consecutive 12 month emissions shall be determined by adding the current month's emissions to that of the previous 11 months. Such records shall include a sample calculation for each pollutant. The Permittee shall make these calculations within 30 days of the end of the previous month.
12. The Permittee shall calculate and record the monthly and consecutive 12 month emissions for all air pollutants emitted and listed in section 112(b)(1) of the Act, inclusive of deletions and additions set out in 40 CFR Part 63, Subpart C, as may be amended from time to time, in units of tons. The consecutive 12 month emissions shall be determined by adding the current month's combined emissions to that of the previous 11 months. Such records shall include a sample calculation for each pollutant. The Permittee shall make these calculations within 30 days of the end of the previous month.
13. The Permittee shall keep all records required by this permit for a period of no less than five years and shall submit such records to the commissioner upon request.

C. Reporting

1. The Permittee shall notify the commissioner, in writing, of the following.
 - a. the date of initial startup of this equipment/process;
 - b. the date the equipment/process achieved maximum rated capacity if it is within 180 days of the date reported in Part IV.C.1.a of this permit.
2. Any VOC/HAP solvent loading limit exceedance as well as any emission limit exceedance must be reported to the commissioner in writing within 24 hours of such exceedance. Such report shall include the nature, extent, and duration of exceedance, the nature of the corrective action, and a description of the action taken to prevent this from re-occurring.

Any required written notification(s) above shall be submitted to DEEP.CACU@ct.gov, DEEP.SEM@ct.gov and DEEP.BAM.AirPermits@ct.gov.

PART V. STACK EMISSION TEST REQUIREMENTS

- A. Stack emission testing shall be performed in accordance with the Emission Test Guidelines available on the DEEP website at www.ct.gov/deep/stacktesting.
- B. Initial stack testing shall be required for the following pollutant(s):

<input type="checkbox"/> PM	<input type="checkbox"/> PM ₁₀	<input type="checkbox"/> PM _{2.5}	<input type="checkbox"/> SO ₂	<input type="checkbox"/> NO _x	<input type="checkbox"/> CO
<input checked="" type="checkbox"/> VOC	<input type="checkbox"/> Opacity	<input checked="" type="checkbox"/> Other (HAPs) (See Part V.G. of this permit)			
- C. The Permittee shall conduct initial stack testing within 60 days of achieving the maximum production rate, but not later than 180 days after initial startup. The Permittee shall submit test results within 60 days after completion of testing.
- D. Stack testing shall be performed with TC-3 operating at 90% or greater of the hourly maximum VOC/HAP solvent load as stated in Part II.A.1.a of this permit.
- E. Stack testing shall be performed to determine if VOC emissions are in compliance with the allowable pound per hour emission limit in Part III.A.1. of this permit.
- F. Stack testing shall be performed to determine if overall control efficiency of the RTO System is 95% or greater as required by Part II.A.2.c. of this permit.

Overall control efficiency shall be determined using approved EPA Reference Methods.
- G. If a change in solvent usage in the TC-3 results in the emission of any new HAP (as listed in RSCA Section 22a-174-29) and calculations for that HAP indicate that its (worst case scenario) Actual Stack Concentration (ASC) is 75% or greater than the Maximum Allowable Stack Concentration (MASC) limits in Part III.B.3 of this permit initial stack testing for that HAP shall be conducted to determine compliance with the Maximum Allowable Stack Concentration (MASC) limits within 120 days of when the solvent containing that HAP was first used.
- H. Recurrent stack testing for VOCs shall be conducted within five years from the date of the previous stack test.
- I. Recurrent stack testing to determine the overall control efficiency of the RTO System shall be conducted within five years from the date of the previous stack test.

- J. Recurrent stack testing for any HAP shall be conducted within five years from the date of the previous stack test for that HAP if the previous test indicated that the Actual Stack Concentration (ASC) for that HAP was 75% or greater than the Maximum Allowable Stack Concentration (MASC) for that HAP.
- K. The stack test results shall be reported in units of lb/hr, HAPs in units of $\mu\text{g}/\text{m}^3$ and percent overall control efficiency.

PART VI. SPECIAL REQUIREMENTS

- A. The Permittee shall not cause or permit the emission of any substance or combination of substances which creates or contributes to an odor beyond the property boundary of the premises that constitutes a nuisance as set forth in RCSA Section 22a-174-23. [STATE ONLY REQUIREMENT]
- B. **Premises Emissions Summary**
 - 1. On January 1st of each calendar year, if the potential emissions of NO_x or VOC from the premises are equal to or greater than 25 tons per year per pollutant, then for such pollutant(s), the Permittee shall:
 - a. Monitor NO_x and/or VOC emissions, as applicable, from the premises for such calendar year.
 - b. Calculate and record annual NO_x and/or VOC emissions, as applicable, from the premises for such calendar year, in units of tons. The Permittee shall make these calculations on or before February 1st of the following year with respect to the previous calendar year. Such records shall include a sample calculation(s).
 - c. If actual NO_x and/or VOC emissions, as applicable, from the premises are equal to or greater than 25 tons for such calendar year, the Permittee shall submit to the commissioner, on or before March 1st of the following year, an annual emissions summary with respect to the premises for the previous calendar year. Such summary shall be submitted on forms prescribed or provided by the commissioner.
 - 2. A Permittee is exempt from Part VI.B.1 requirements of this permit if, on January 1st of the subject year, the premises was operating in accordance with any of the following:
 - a. A valid Title V permit issued pursuant to RCSA section 22a-174-33;
 - b. RCSA section 22a-174-33a; or
 - c. RCSA section 22a-174-33b.

PART VII. ADDITIONAL TERMS AND CONDITIONS

- A. This permit does not relieve the Permittee of the responsibility to conduct, maintain and operate the regulated activity in compliance with all applicable requirements of any federal, municipal or other state agency. Nothing in this permit shall relieve the Permittee of other obligations under applicable federal, state and local law.
- B. Any representative of DEEP may enter the Permittee's site in accordance with constitutional limitations at all reasonable times without prior notice, for the purposes of inspecting, monitoring and enforcing the terms and conditions of this permit and applicable state law.
- C. This permit may be revoked, suspended, modified or transferred in accordance with applicable law.
- D. This permit is subject to and in no way derogates from any present or future property rights or other

rights or powers of the State of Connecticut and conveys no property rights in real estate or other material, nor any exclusive privileges, and is further subject to any and all public and private laws and to any federal, state or local laws or regulations pertinent to the facility or regulated activity affected thereby. This permit shall neither create nor affect any rights of persons or municipalities who are not parties to this permit.

- E.** Any document, including any notice, which is required to be submitted to the commissioner under this permit shall be signed by a duly authorized representative of the Permittee and by the person who is responsible for actually preparing such document, each of whom shall certify in writing as follows: "I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that any false statement made in the submitted information may be punishable as a criminal offense under section 22a-175 of the Connecticut General Statutes, under section 53a-157b of the Connecticut General Statutes, and in accordance with any applicable statute."
- F.** Nothing in this permit shall affect the commissioner's authority to institute any proceeding or take any other action to prevent or abate violations of law, prevent or abate pollution, recover costs and natural resource damages, and to impose penalties for violations of law, including but not limited to violations of this or any other permit issued to the Permittee by the commissioner.
- G.** Within 15 days of the date the Permittee becomes aware of a change in any information submitted to the commissioner under this permit, or that any such information was inaccurate or misleading or that any relevant information was omitted, the Permittee shall submit the correct or omitted information to the commissioner.
- H.** The date of submission to the commissioner of any document required by this permit shall be the date such document is received by the commissioner. The date of any notice by the commissioner under this permit, including but not limited to notice of approval or disapproval of any document or other action, shall be the date such notice is personally delivered or the date three days after it is mailed by the commissioner, whichever is earlier. Except as otherwise specified in this permit, the word "day" means calendar day. Any document or action which is required by this permit to be submitted or performed by a date which falls on a Saturday, Sunday or legal holiday shall be submitted or performed by the next business day thereafter.
- I.** Any document required to be submitted to the commissioner under this permit shall, unless otherwise specified in writing by the commissioner, be directed to: Office of Director; Enforcement Division; Bureau of Air Management; Department of Energy and Environmental Protection; 79 Elm Street, 5th Floor; Hartford, Connecticut 06106-5127.