

State of Washington Department of Ecology
Notice of Construction Approval Order

In the matter of approving a new)	Approval Order No. Preliminary
air contaminant source for)	Determination
Group14 Technologies)	AQPID No. A0250325

Project Summary

Group14 Technologies, Inc., herein referred to as the Permittee, is a new Battery Active Materials Factory located at 13400 Wheeler Road NE, Moses Lake, Washington, in Grant County. The Permittee is classified as a minor source. The project consists of installation and operation of equipment to manufacture lithion-ion battery anode material (via two modular process units) and the air emissions control equipment that consists of Dust Collectors, Cooling Towers, Thermal Oxidizers, and Selective Catalytic Reduction units. Additionally, there will be five Air Handling Units, three emergency generators banks (two engines in each bank), and two fire water pumps. The list below highlights the equipment regulated by this Approval Order:

Item No.	ID No.	Equipment / Air Pollution Control Equipment	Emissions Control Equipment for process/equipment:	Location
1	DC1	Dust Collector	Material Unloading/Mixing	Main 1
2	FUR1	Carbon Furnace	n/a	Main 1
3	TO1	Thermal Oxidizer (TO)	Carbon Furnace (PSK)	Main 1
4	SCR1	Selective Catalytic Reduction (SCR)	PSK TO	Main 1
5	CT1	Cooling Tower	PSK	Main 1
6	DC2	Dust Collector	Milling Operation	Main 1
7	SG1	Silane Gas Tanks	Compounding Reactor	Main 1
8	CR1	Compound Reactor	n/a	Main 1
9	TO2	Thermal Oxidizer	Compounding Reactor (Silane)	Main 1
10	DC3	Dust Collector	Compounding Reactor TO	Main 1
11	TO3	Thermal Oxidizer	Compounding Reactor (Acetylene)	Main 1
12	DC4	Dust Collector	Silicon-Carbon Handling & Packaging	Main 1
13	DC5	Dust Collector	Material Unloading/Mixing	Main 2
14	FUR2	Carbon Furnace	n/a	Main 2
15	TO4	Thermal Oxidizer	Carbon Furnace (PSK)	Main 2
16	SCR2	Selective Catalytic Reduction	PSK TO	Main 2
17	CT2	Cooling Tower	PSK	Main 2
18	DC6	Dust Collector	Milling Operation	Main 2
19	SG2	Silane Gas Tanks	Compounding Reactor	Main 2
20	CR2	Compound Reactor	n/a	Main 2
21	TO5	Thermal Oxidizer	Compounding Reactor (Silane)	Main 2
22	DC7	Dust Collector	Compounding Reactor TO	Main 2
23	TO6	Thermal Oxidizer	Compounding Reactor (Acetylene)	Main 2
24	DC8	Dust Collector	Silicon-Carbon Handling & Packaging	Main 2
25	GEN1	Emergency Generator 1 (two engines in parallel, 757hp each)	Main 1	Ext. 1
26	GEN2	Emergency Generator 2 (two engines in parallel, 757hp each)	Main 2	Ext. 2
27	GEN3	Emergency Generator 2 (two engines in parallel, 757hp each)	Backup	Ext. 2
28	FWP1	Fire Water Pump Engine 1	Main 1	Ext. 1
29	FWP2	Fire Water Pump Engine 2	Main 2	Ext. 1
30	AHUs	Air Handling Units (5 total)	Main 1, Main 2, Ops, Utility, and Admin	Multi.

Legal Authority

The emissions from the proposed project have been reviewed under the legal authority of RCW 70A.15.2210 and the applicable rules and regulations adopted thereunder. The proposed project, if operated as specified, will be in accordance with applicable rules and regulations, as

set forth in Chapters 173-400 WAC and 173-460 WAC and the operation thereof, at the location proposed, will not result in ambient air quality standards being exceeded.

Therefore, it is ordered that the project as described in the Notice of Construction (NOC) application and more specifically detailed in plans, specifications, and other information submitted to the Washington State Department of Ecology (Ecology) is approved for construction and operation, provided the following conditions are satisfied:

Approval Conditions

1. Operational Limitations

a. Facility Wide Limits

- i. Each module (battery active material manufacturing module) is limited to 2,000 metric tons of silicon-carbon composite per calendar year.
- ii. Since there are two identical modules, Approval Conditions 1(b)-(g) apply to each battery active material manufacturing modules.
- iii. The facility must not exceed the use of 425.0 million standard cubic feet of pipeline quality natural gas per calendar year.
- iv. Opacity Limit - Visible emissions from any emission point must not exceed five percent opacity, as determined by 40 C.F.R. Part 60, Appendix A, Test Method 9.
- v. There must be no visible emissions from the facility at the property boundary, as measured by 40 C.F.R. Part 60, Appendix A, Test Method 22
- vi. All dust collectors must have a differential pressure gauge (scaled in inches of water column) installed across the inlet and outlet of the exhaust. The range of pressure drop readings that indicate proper filter operation must be incorporated into the facility Operations and Maintenance (O&M) manual as well as procedures to follow in the event the gauge indicates operation is outside those ranges.

b. Raw Material Unloading and Mixing

- i. Raw materials must remain in airtight packing while being stored.
- ii. All offloading and mixing operations must be conducted in an enclosed area under negative draw pressure, with all exhaust from these operations vented through the dust collector (DC1 & DC5). The dust collector must operate at all times that offloading or mixing operations are occurring.
- iii. Emissions from the dust collector (DC1 & DC5) must not exceed 0.005 gr/dscf as measured by the average of three test runs using 40 C.F.R. Part 60, Appendix A, Test Method 5.

- iv. The dust collector (DC1 & DC5) must be equipped with filters that meet a control efficiency of 99.5 percent efficiency.

c. **Carbon Production Furnace (PSK Furnace)**

- i. All waste gas from the carbon production furnace must exhaust to a Thermal Oxidizer (TO1 & TO4) followed by a Selective Catalytic Reduction (SCR1 & SCR2) DeNOx system. The thermal oxidizer followed by SCR DeNOx system must be operated and maintained in continuous operation at all times when the carbon furnace is in operation.
- ii. The Thermal Oxidizer must meet all of the following limits:
 - A. A minimum non-methane organic compound (NMOC) destruction efficiency of 99.94% percent or must not cause a discharge of NMOCs into the atmosphere in excess of 0.462 lb/hr, as determined using Method 25A or other test method approved in advance by Ecology.
 - B. A minimum hydrogen cyanide (HCN) destruction efficiency of 99% percent or must not cause a discharge of hydrogen cyanide into the atmosphere in excess of 0.234 lb/hr, as determined using EPA Method OTM-29 or other test method approved in advance by Ecology.
 - C. A minimum carbon monoxide (CO) destruction efficiency of 99.7% percent or must not cause a discharge of CO into the atmosphere in excess of 2.321 lb/hr, as determined using EPA Method 10 or other test method approved in advance by Ecology.
- iii. The thermal oxidizer must be operated at or above the average temperature maintained during the latest source test but must not be operated at less than 1,400°F. The average temperature during the latest source test for source test must be identified at or near the temperature monitor.
- iv. The owner or operator must install, calibrate, maintain, and operate a monitoring device for the continuous measurement and recording of the thermal oxidizer chamber temperature (or sampled at intervals no greater than 15 seconds and recorded as 1-minute averages).
- v. The owner or operator must annually test or replace the temperature monitoring system thermocouples or pyrometers. If performed, the test must consist of either a physical or electronically simulated comparison and must follow manufacturer specifications. The results of the test readings must be within +/- 14 degrees F. If the results of the test readings exceed +/- 14 degrees of the reference value, the thermocouple must be replaced or adjusted to read within +/- 14 degrees of the reference value.
- vi. The exhaust from the SCR must meet all of the following limits:

- A. 2.334 lb/hr nitrogen oxides (NO_x), as determined using EPA Method 7E or other test method approved in advance by Ecology.
 - B. 0.700 lb/hr ammonia, as determined using EPA Reference Method 5, or an alternative method approved by Ecology.
- vii. The owner or operator must conduct weekly monitoring using colorimetric tubes or a hand-held instrument capable of detecting concentrations at the required levels to accurately measure the concentration of ammonia downstream of the SCR. If the ammonia slip in the SCR exceeds 30 ppmvd at 7% O₂, the owner or operator must, as soon as possible, but no later than within 24 hours, take corrective action on the ammonia dosing unit to reduce ammonia slip below this level. If corrective action is taken, the owner or operator must monitor to verify the concentration is below 30 ppmvd at 7% O₂. The weekly monitoring using colorimetric tubes and any corrective action measures must be recorded in the onsite maintenance log.
- viii. Once per week if the carbon production furnace is in operation during the week, the owner or operator must inspect the system for visible emissions. The inspection must be conducted when the carbon production furnace is in operation. If visible emissions are observed, the owner or operator must shut down the furnace upon discovery of the problem until corrective action has been taken and the system is back to operating properly. The weekly visible emission inspection results and any corrective action measures must be recorded in the onsite maintenance log.
- d. **Cooling Tower**
- i. The Cooling Tower (CT1 & CT2) must maintain the design drift rate of 0.0005 percent to ensure particulate emissions are reduced from use with the PSK Furnace.
- e. **Milling Operations**
- i. The exhaust from the multi-stage grinding process must be routed through the dust collector (DC2 & DC6). The dust collector must operate at all times that the multi-stage grinding process is in use.
 - ii. Emissions from the dust collector must not exceed 0.005 gr/dscf as measured by the average of three test runs using 40 C.F.R. Part 60, Appendix A, Test Method 5.
 - iii. The dust collector must be equipped with filters that meet a control efficiency of 99.5 percent efficiency.
- f. **Compounding Reactor**
- i. If silane gas is not fully utilized in the process, the compounding units must exhaust to a thermal oxidizer (TO2 & TO5) followed by a dust collector system (DC3). The owner or operator must track the hours silane gas is exhausted to the

- thermal oxidizer and within 30 days of the end of each calendar month, determine the total hours silane gas is exhausted to the thermal oxidizer over the previous consecutive 12-month period.
- ii. The acetylene deposition process must exhaust to the thermal oxidizer (TO3 & TO6). The thermal oxidizer must meet the following limit:
 - A. A minimum non-methane organic compound (NMOC) destruction efficiency of 99.82% percent or an outlet exhaust of 21 ppmv, as determined using Method 25A or other test method approved in advance by Ecology.
 - iii. The thermal oxidizer chamber temperature must be at least 1,500°F whenever silane gas or the acetylene deposition process is exhausted to the unit.
 - iv. The owner or operator must install, calibrate, maintain, and operate a monitoring device for the continuous measurement and recording of the thermal oxidizer chamber temperature (or sampled at intervals no greater than 15 seconds and recorded as 1 minute averages).
 - v. The owner or operator must annually test or replace the temperature monitoring system thermocouples or pyrometers. If performed, the test must consist of either a physical or electronically simulated comparison and must follow manufacturer specifications. The results of the test readings must be within +/- 15 degrees F. If the results of the test readings exceed +/- 15 degrees of the reference value, the thermocouple must be replaced or adjusted to read within +/- 15 degrees of the reference value.
 - vi. Emissions from the dust collector system must not exceed 0.005 gr/dscf as measured by the average of three test runs (of at least 60 minutes each, or a shorter time period if approved by Ecology in advance, using EPA Method 5.
 - vii. The inlet temperature to the dust collector system must be less than 499°F. The owner or operator must install, calibrate, maintain, and operate a monitoring device for the continuous measurement and recording of the inlet temperature when the unit is in operation. A read out that provides a visual display or record of the inlet temperature must be readily accessible on site for operational control or inspection.
 - viii. The dust collector system must be equipped with filters that meet a control efficiency of 99.5 percent.
- g. **Silicon-Carbon Handling & Packaging**
- i. All carbon and silicon handling and packaging operations must be conducted in an enclosed area under negative draw pressure with all exhaust from these operation vented through the dust collector (DC4 & DC8). The dust collector must operate at all times that carbon and silicon handling or packaging operations are occurring.

- ii. Emissions from the dust collector must not exceed 0.005 gr/dscf as measured by the average of three test runs using EPA Method 5.
- iii. The dust collector must be equipped with filters that meet a control efficiency of 99.5 percent.
- h. **Air Handling Units**
 - i. All five Air Handling Units (located in various buildings) must use pipeline quality natural gas.
- i. **Emergency Generators (three sets, six individuals engines, two in parallel per set)**
 - i. Each diesel engine-generator must be equipped with a properly operated and maintained non-resettable hour meter (total of six for the facility).
 - ii. All diesel-fueled compression ignition engines must be fueled by ultra-low sulfur diesel fuel with a sulfur content of no more than 0.0015 percent by weight. Records must be kept for each diesel-fueled compression ignition engine in accordance with Approval Condition 3.
 - iii. Each of the generator must not be operated more than 100 hours for maintenance or reliability testing in any consecutive 12-month period.
 - iv. Only one generator may be operated for no more than 30 minutes per day, between 7:00am and 5:00pm, for non-emergency purposes.
 - v. There must be no operation of diesel engine-generators to produce power for demand-response arrangements, peak shaving arrangements, nor to provide power as part of a financial arrangement with another entity, or to supply power to the grid.
 - vi. Replacement of these engines, if necessary, must be with emergency engines with EPA-approved emission levels for the date of installation of the replacement engine (the EPA Tiered Emission Levels for the date of installation).
- j. **Fire Water Pump Diesel Engines**
 - i. Each diesel engine must be equipped with a properly operated and maintained non-resettable hour meter (total of three for the facility).
 - ii. All diesel-fueled compression ignition engines must be fueled by ultra-low sulfur diesel fuel with a sulfur content of no more than 0.0015 percent by weight. Records must be kept for each diesel-fueled compression ignition engine in accordance with Approval Condition 3.
 - iii. Each of the Pump Engines must not be operated more than 100 hours for maintenance or reliability testing in any consecutive 12-month period.
 - iv. Only one Pump Engine may be operated at a time, for non-emergency purposes.

k. **reserved**

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2. **Operation & Maintenance**

- a. The Permittee must follow all recommended installation, configuration, operation, and maintenance provisions supplied by emission unit and component manufacturers.
- b. An operations and maintenance (O&M) manual must be developed by the Permittee for each emission unit, process, and activity. The manufacturer's instructions may be referenced in the O&M manual.
 - i. The O&M manual must include the following, at a minimum:
 - A. Normal operating parameters for emissions units, processes, and activities.
 - B. A maintenance schedule for each emissions unit, process, and activity.
 - C. A description of the monitoring procedures.
 - D. Monitoring and record keeping requirements.
 - E. Actions for abnormal control system operation.
 - F. Additional project-specific information, as needed.
 - ii. The O&M manuals must be developed within 30 days of commencing operation of each emission unit.
- c. Emission units, processes, and activities must be operated and maintained in accordance with the O&M manual.
- d. The Permittee must assess all complaints received. The Permittee must initiate corrective action in response to a complaint within three calendar days of receipt of the complaint.

3. **Monitoring & Recordkeeping**

- a. The O&M manual and any other relevant operating plan or fugitive dust control program (FDCP) must be reviewed annually.
 - i. The date of each review and the person performing each review must be documented in the O&M manual.
 - ii. The O&M manual and FDCP/other relevant operating plan must be updated to reflect any modifications to emission units or operating procedures.
- b. O&M records must be kept on premises in hard copy or readily available on-site electronically.
- c. For all air-quality related complaints, the following records must be kept:

- i. A written record of the complaint received by the Permittee or forwarded to the Permittee.
- ii. The Permittee's action to investigate the validity of the complaint, any corrective action that was taken in response to the complaint, and the effectiveness of the remedial action.
- d. The date, time, duration, and cause of any periods where control technology equipment is out of service must be documented and maintained.
- e. All data required by this NOC Approval Order must be maintained in a readily retrievable manner for a period of five years and must be made available to authorized representatives of Ecology upon request.
- f. The Permittee must complete any additional monitoring or recordkeeping necessary to determine compliance with the requirements of this NOC Approval Order, as determined by Ecology.
- g. Operation tracking using annual hours of operation compiled monthly, on a rolling 12-month basis.
- h. Weekly records of the pressure differential across dust collectors.
- i. Annual records of natural gas usage and supplier certification sheets.
- j. Annual records of diesel usage and supplier certification sheets.

4. Testing

- a. The Permittee must submit a test plan to Ecology for review and approval at least 60 days prior to source testing. Ecology may require a new protocol for re-test events conducted after a failed source test, when required, and Ecology may approve a shorter timeframe for submission for the re-test protocol. The test plan must include the following information, at a minimum:
 - i. Identification of each emission unit(s) to be tested.
 - ii. The operating parameters to be monitored during the test.
 - iii. A description of the emission unit(s) to be tested.
 - iv. The time and date of the proposed source test.
 - v. Identification and qualifications of the source test personnel.
 - vi. A description of the test methods and procedures to be used.
- b. Test reports must be submitted to Ecology within 60 days of completion of the source testing. Test reports must include the following information, at a minimum:
 - i. The information described under Approval Condition 4(a).

- ii. The information described in the test plan and any subsequent test plan approval letters.
 - iii. Field and analytical laboratory data.
 - iv. Quality assurance/quality control procedures and documentation.
 - v. Analyzer data recorded during the test.
 - vi. A summary of results, reported in units and averaging periods consistent with the applicable emission limit.
 - vii. A summary of control system and equipment operating conditions.
 - viii. Copies of all field data.
 - ix. Chain of custody information.
 - x. Calibration documentation.
 - xi. Discussion of any abnormalities associated with the results.
 - xii. A statement signed by the senior management official of the testing firm certifying the validity of the source test report.
 - xiii. Emission calculations.
- c. The Permittee must provide adequate sampling ports, safe sampling platforms, and access to platforms and utilities for sampling and testing, in accordance with 40 C.F.R. 60.8, 40 C.F.R. 63.7(d), and WAC 173-400-105(4).
 - d. When information obtained by Ecology indicates the need to quantify emissions, Ecology may require the Permittee to conduct material analysis or air emission testing under WAC 173-400-105. This testing requirement is in addition to any testing required by Ecology in this NOC Approval Order, other permits, or other state or federal requirements.
 - e. For initial and subsequential compliance testing, the carbon production furnace and compounding reactor must be operated with a production rate of at least 90% of the highest operation loads achieved at the facility in the previous 12 months of operation.
 - f. Initial compliance test for all eight dust collectors must be demonstrated by testing dust collector emission limits within 180 days of starting-up the dust collectors. The test plan must detail the test methods used for each pollutant, the operational data that will be collected during the test, and any other relevant information about the test.
 - g. Continued compliance testing for each dust collector is not required at this time.
 - h. Initial compliance for, each Module, with Condition 1(c) and 1(f) [carbon production furnace TO, Silane Abatement TO, and Acetylene TO emission limits] must be demonstrated by testing the inlet and exhaust of each thermal oxidizer within 180

days of starting-up of the carbon production furnace and compounding reactor. Compliance testing for each emission must consist of at least three separate 60-min test runs.

- i. Continued compliance testing for each TO for each Module must be demonstrated by testing the inlet and exhaust of the TO every 12 months, starting 12 months after the initial compliance test. Compliance testing for each compound must consist of at least three separate 60-min test runs.
- j. Initial compliance with Condition 1(c) (SCR limits) must be demonstrated by testing the exhaust of the SCR DeNOx exhaust stack within 180 days of starting-up of the carbon production furnace. Compliance testing for each compound must consist of at least three separate 60-min test runs. For the purpose of determining compliance, the arithmetic means of results of the three runs shall apply.
- k. Continued compliance testing for the SCR, for each Module, must be demonstrated by testing the exhaust of the SCR DeNOx exhaust stack every 12 months, starting 12 months after the initial compliance test. Compliance testing for each emission must consist of at least three separate 60-min test runs.

5. Reporting

- a. All notifications, plans, reports, and other submittals must be submitted in a manner approved by Ecology.

Washington State Department of Ecology
Eastern Regional Air Quality Program
4601 N. Monroe Street
Spokane, WA 99205-1295

Electronic Annual Report Submittals: ecyaqciero@ecy.wa.gov

OR AS DIRECTED.

- b. The Permittee must notify Ecology within one business day of any of the following events occurring:
 - i. The receipt of any complaint.
 - ii. Compost fires, control failures, etc.
- c. The Permittee must notify Ecology of commissioning of emission units, activities, and processes within one week of initiating such activities, unless otherwise specified by Ecology. The notice must include:
 - i. Make, model, serial number, etc.
- d. The Permittee must submit results of all required monitoring to Ecology on an annual basis. Results must be submitted to Ecology by January 31.

To appeal you must do all of the following within 30 days of the date of receipt of this NOC Approval Order:

- File your appeal and a copy of this NOC Approval Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this NOC Approval Order on Ecology in paper form - by mail or in person (see addresses below). E-mail is not accepted.

You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

Address and Location Information

Street Addresses:

Department of Ecology
Attn: Appeals Processing Desk
300 Desmond Drive SE
Lacey, WA 98503

Pollution Control Hearings Board
1111 Israel Rd SW
STE 301
Tumwater, WA 98501

Mailing Addresses:

Department of Ecology
Attn: Appeals Processing Desk
PO Box 47608
Olympia, WA 98504-7608

Pollution Control Hearings Board
PO Box 40903
Olympia, WA 98504-0903

E-mail Address:

Department of Ecology
Not currently available (see WAC 371-08)

Pollution Control Hearings Board
Pchb-shbappeals@elaho.wa.gov

Americans with Disabilities Act Information

Accommodation Requests

To request ADA accommodation including materials in a format for the visually impaired, call Ecology at 360-407-7668 or visit <https://ecology.wa.gov/accessibility>. People with impaired hearing may call Washington Relay Service at 711. People with speech disability may call TTY at 877-833-6341.

Dated on this XX Day of MONTH, 2023.

Prepared by:

Andy Kruse, PE
Air Quality Program
Department of Ecology
State of Washington

Approved by:

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Air Quality Program
Department of Ecology
State of Washington