



# Department of Environmental Protection

Central Regional Office • 627 Main Street, Worcester MA 01608 • 508-792-7650

DEVAL L. PATRICK  
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Commissioner

Date: January 13, 2012

Dan Kennedy  
Cleanpart East  
10 Cabot Street  
Southbridge, MA 01550

**RE: Southbridge**  
Transmittal No.: X240225  
Application No.: CE-11-027  
Class: NM25  
FMF No.: 439140  
SSEIS No. 118-1307  
**LPA PLAN APPROVAL**

Dear Mr. Kennedy:

The Massachusetts Department of Environmental Protection, Bureau of Waste Prevention, Permitting Section ("MassDEP") has determined that the referenced Limited Plan Application ("LPA") is administratively complete and in conformance with current air pollution control engineering practices. MassDEP **approves** the referenced LPA authorizing the proposed construction, substantial reconstruction and/or alteration, and subsequent operation, of the chemical room and scrubber at the above-referenced location.

This LPA Plan Approval is issued in accordance with 310 CMR 7.02 of the Air Pollution Control Regulations ("Regulations"), 310 CMR 7.00, as adopted pursuant to M.G.L. c.111, sections 142A-142N.

Included as part of the LPA Plan Approval are the following:

- Stamped approved **BWP AQ 01-B** Application form,
- Special Conditions, and
- General Conditions.

Please review the entire LPA Plan Approval carefully as it stipulates the particular conditions which Cleanpart East (the "Facility") owner/operator must adhere to for the Facility to be constructed/reconstructed/alterd and operated in compliance with the Regulations.

MassDEP has determined that the filing of an Environmental Notification Form ("ENF") with the Secretary of Environmental Affairs, for air quality purposes, was not required prior to this action by MassDEP. Notwithstanding this determination, the Massachusetts Environmental Policy Act and Regulation 301 CMR 11.00, section 11.04, provide certain "Fail-Safe Provisions" which allow the Secretary to require the filing of an ENF and/or Environmental Impact Report later.

## I. FACILITY DESCRIPTION/HISTORY

In 1996 the Semicon Company started operations at this Facility. The business of this Facility is providing cleaning and servicing of parts that are used in the semiconductor manufacturing industry. On March 4, 2005, MassDEP issued a Non Major Comprehensive Plan Application (NMCPA) Plan Approval, Transmittal #**W056173**, to Semicon for this Facility; this Plan Approval included the use of cleaning solvents (isopropyl alcohol and acetone), the use of an aluminum metal spray process, and a scrubber for chemical fumes from cleaning baths. On August 14, 2007, MassDEP issued NMCPA Plan Approval, Transmittal #**W125730**, to Semicon for a new replacement scrubber, a new second electric aluminum spray operation, and increased solvent usage. The name of the Facility was later changed from Semicon to Cleanpart East (the "Permittee"). On November 8, 2011 MassDEP received the present application for a new replacement scrubber. **This Plan Approval, Application No. CE-11-027, supersedes NMCPAs Plan Approvals, Transmittal #W056173 and #W125730, in their entirety.**

## II. PROJECT DESCRIPTION

Existing Emission Units (EU) unchanged by this project are the aluminum coating process (EU #1 & #2) and parts cleaning with solvent throughout the Facility (EU #3). The Chemical Room (EU#4) is being altered as described below.

### A. Emission Units #1 & #2

1. Aluminum Coating Process (EU #1 and EU #2, two process lines) each have a control console and power supply. This powers the continuously variable spraying current, which is controlled by the airflow to the spray gun. The spray gun is run by the airflow, which is the measure of material throughput and is infinitely variable up to its full nominal rating at 100% duty cycle. At maximum operating speed and power input of 300 amps, the aluminum coverage (spray) is rated at 65% efficiency for material coating.
2. The power supply houses a removable, covered wire dispenser system, which can be used in a remote mode and is designed to accept a dual wire feed. This dual wire feed allows two 25-pound spools of 99.5% aluminum. The two metalizing wires feed simultaneously at a uniform rate of speed through the spray gun and the raw material is melted by an electric arc. At the proposed maximum motor speed meter reading of 300 amps, this operation would spray 18 pounds of aluminum per hour per emission unit onto the semiconductor part.
3. The aluminum overspray Particulate Matter (PM) will be controlled by a primary control device (cyclone) followed by a secondary control device (dust collector). See Section VI-Special Conditions, Item D. for details.
4. The Permittee is currently using a cyclone unit attached to the ARCote spray system, which subsequently discharges to the dust collector. The cyclone unit captures the remaining molten aluminum overspray. The cyclone tempers the molten aluminum spray down by adding high centrifugal pressure. The larger, heavier PM of tempered aluminum then drops down into a hopper for proper removal and disposal. The dust collector will collect the remaining overspray of aluminum PM from the spray system and cyclone.
5. The dust collector takes the remaining overspray of aluminum PM for the cyclone and filters the remaining aluminum through a series of filter cartridges. Air enters the ductwork from the wire arc spray booth and flows into the cyclone before continuing on to the dust collector.

### B. Emission Unit #3

1. Cleaning Semiconductor Components (EU #3) is done with Isopropyl alcohol (IPA) and Acetone. IPA and Acetone are shipped to the site in 55-gallon drums where they are stored until needed on the production line.
2. The IPA is then transferred into one of the two storage tanks. Tank No. 1 and Tank No. 2 have a storage capacity of 48.7 gallons and 59.8 gallons respectively. The tanks are kept closed when employees are not actively removing the IPA. Acetone is also transferred into one of two other storage tanks. Tank No. 1 is a cylindrical tank

with a storage capacity of 16.3 gallons and Tank No. 2 is a rectangular tank with a capacity of 48.7 gallons.

**C. Emission Unit #4**

The approved project is for the replacement of the previously approved EU #4 (Chemical Room) and its pollution control device (wet scrubber) with a new chemical room and new scrubber. In the Chemical Room, dilute acid and alkali baths and small amounts of isopropyl alcohol (IPA) are used to clean parts. Exhaust ducts from the acid and alkali baths are vented to a scrubber. The previous scrubber was a Viron Model WS-54 rated at 8,000 actual cubic feet per minute (ACFM). The new scrubber will be a AES Model AES-25K20-11 rated at 14,765 ACFM.

**III. EMISSION UNIT IDENTIFICATION**

Each Emission Unit (EU) identified in Table 1 is subject to and regulated by this Plan Approval:

<b>Table 1</b>			
Emission Unit (EU)	Description of Emission Unit	EU Manufacturer and model number	Pollution control device
EU #1 & #2	Aluminum Coating Process	not applicable	Cyclone and Dust Collector
EU #3	Semiconductor Parts Cleaning—Isopropyl Alcohol & Acetone	not applicable	None
EU #4	Chemical Room	not applicable	Wet Scrubber

**IV. EMISSIONS**

The operation of EU #1 and EU #2 will result in the release of fugitive Particulate Matter (PM) emissions. The operation of the EU #3 will result in the release of fugitive photochemically reactive Volatile Organic Compounds (VOC) and non-photochemically reactive hydrocarbons (HYC). The operation of EU #4 will result in emissions of VOC and Hazardous Air Pollutants (HAP) from acid vapors.

**V. EMISSION LIMITS AND RESTRICTIONS**

The Permittee is subject to and shall not exceed the Emission Limits as contained in Table 2, below:

<b>Table 2</b>				
<b>Emission Unit</b>	<b>Raw Material</b>	<b>Pollutant</b>	<b>Emission Limit</b>	<b>Restrictions</b>
EU #1 & #2	Aluminum	PM	<ul style="list-style-type: none"> <li>• Less than 1 TPM and</li> <li>• 1 TPY</li> </ul>	<ul style="list-style-type: none"> <li>• 18 Pounds per Hour per emission unit</li> </ul>
		Opacity	<ul style="list-style-type: none"> <li>• Shall not exceed 5% during any period of operation.</li> </ul>	
EU #3	Acetone	HYC	<ul style="list-style-type: none"> <li>• 1.5 TPM and</li> <li>• 13.0 TPY</li> </ul>	<ul style="list-style-type: none"> <li>• 500 Gallons per Calendar Month and 4000 Gallons per 12-month rolling total</li> </ul>
	Isopropyl Alcohol	VOC	<ul style="list-style-type: none"> <li>• 0.5 TPM and</li> <li>• 3.5 TPY</li> </ul>	<ul style="list-style-type: none"> <li>• 160 Gallons per Calendar Month and 1100 Gallons per 12-month rolling total</li> </ul>
EU #4	HCl, HNO <sub>3</sub> , HF, KOH, Acetic Acid	<ul style="list-style-type: none"> <li>• VOC (Acetic Acid)</li> <li>• HAP (HCl &amp; HF)</li> <li>• Non-Criteria Air Contaminants (HNO<sub>3</sub> and KOH)</li> </ul>	<ul style="list-style-type: none"> <li>• Less than 0.1 TPM (total of all pollutants) and</li> <li>• 0.3 TPY (total of all pollutants)</li> </ul>	<ul style="list-style-type: none"> <li>• None</li> </ul>
Facility Wide (VOC summary)	Isopropyl Alcohol (from EU #3) and Acetic Acid (from EU#4)	VOC	<ul style="list-style-type: none"> <li>• 0.6 TPM and</li> <li>• 3.8 TPY</li> </ul>	<ul style="list-style-type: none"> <li>• Isopropyl Alcohol restrictions for EU #3</li> </ul>

EU# = Emission Unit Number  
 PM = Total Particulate Matter  
 VOC = Volatile Organic Compounds  
 HAPs (total) = total Hazardous Air Pollutants  
 TPM = tons per calendar month  
 TPY = tons per 12-month rolling period  
 HYC = non-photochemically reactive hydrocarbons  
 HCl = hydrogen chloride  
 HF = hydrogen fluoride  
 HNO<sub>3</sub> = nitric acid  
 KOH = potassium hydroxide

## VI. SPECIAL CONDITIONS

- A. This Plan Approval supersedes and replaces both of the above referenced 7.02 Plan Approvals Transmittal Numbers W056173 and W125730. However, the underlying Plan Approval applications, with supporting material for each of the above referenced Plan Approvals, remain applicable unless superseded by the conditions and provisions of this Plan Approval, Application No. CE-11-027.
- B. The Permittee shall install and use an exhaust stack on each of the Emission Units listed in Table 3 that is

consistent with good air pollution control engineering practice and that discharges so as to not cause or contribute to a condition of air pollution. Each exhaust stack shall be configured to discharge the gases vertically and shall not be equipped with any part or device that restricts the vertical exhaust flow of the emitted gases, including but not limited to rain protection devices known as “shanty caps” and “egg beaters.” The Permittee shall install and utilize exhaust stacks with the following parameters, as contained in Table 3 below, for the Emission Units that are regulated by this Plan Approval.

<b>Table 3</b>				
<b>Emission Unit</b>	<b>Stack Height Above Roof Top (feet)</b>	<b>Stack Inside Exit Dimensions</b>	<b>Stack Gas Exit Velocity Range (feet per second)</b>	<b>Stack Gas Exit Temperature Range (°F)</b>
EU #1 & #2	10	24 inches diameter	62	NA
EU #4	13	3 feet 2 inches by 2 feet 8 inches	33	75-85

EU# = Emission Unit Number

°F = Degree Fahrenheit

- C. EU #1 & #2 - The Permittee shall maintain the pressure drop on the dust collection system between 1 and 4 inches of water during all operating times.
- D. The Particulate Matter emissions from EU #1 & #2 shall be controlled by a primary control device (cyclone) and a secondary control device (dust collector). Details on the control equipment are presented below.
  - 1. The Cyclone shall consist of a dry mechanical dust collector, manufactured by Farr Dust Collection Products model FD-45 or equivalent to remove the large coarse particles from the gas stream prior to entering the dry air filter system. The cyclone consists of one module. The unit will operate with an overall collection efficiency of 98%.
  - 2. The Permittee shall monitor the hopper associated with the cyclone once per shift to verify the hopper is not overfilled. Records shall be maintained and posted conspicuously on or near the equipment.
  - 3. The Dust Collector is a HA Series I dust collector which utilizes pleated non-woven fabric filter cartridges. The dust collector will capture the remaining over spray of aluminum particulate matter emissions from the spray system and cyclone. A Magnahelic measures the pressure drop across the filter cartridges.
- E. The Permittee shall be responsible for maintaining EU #1 & #2 operation and EU #4 operation with associated air pollution control equipment in accordance with the manufacturer’s specifications and MassDEP requirements for demonstrating compliance with the air pollution control regulations.
- F. EU #3 -The Permittee shall employ Good Housekeeping practices throughout the Facility to minimize VOC and HVC emissions. Good Housekeeping is defined as:
  - 1. All VOC and HVC containing formulations must be stored in covered containers, and
  - 2. Saturated cleaning or wiping rags utilizing VOC and HVC solvent shall be kept in covered containers.
- G. The new scrubber for EU #4 shall be an AES Model No. AES-25K20-11 packed tower scrubber rated at 14,765 ACFM. The scrubber will have a height of 16 feet and a square cross section with a cross sectional area of 49 square feet. It will circulate 70 gallons per minute of scrubbing liquid. The scrubber liquid pH setpoint will be in the range of 9 to 10. The scrubber will be rated at approximately 98% collection efficiency. Additional

requirements for the new scrubber shall include:

1. The scrubbing liquid flowrate to the spray nozzles shall be measured by a flowmeter.
2. The recirculating scrubbing liquid shall have a filter to remove particulates that could plug the spray nozzles.
3. The Permittee shall inspect interior of scrubber on semi-annual basis to confirm spray nozzles are functioning properly.
4. The Permittee shall monitor the pH and scrubber differential pressure on a daily basis.
5. The scrubber shall exhaust from a stack with exit height at least 13 feet above roof level.

## VII. GENERAL CONDITIONS

- A. **INSTALLATION and OPERATION** - No person shall install or operate the equipment as noted in this plan application except in conformance with the requirements established in this Plan Approval. This Plan Approval is only for the equipment as noted within the application or as may otherwise be specified in the Plan Approval.
- B. **SUSPENSION, MODIFICATION, AMENDMENT OR REVOCATION** - This Plan Approval may be suspended, modified, amended or revoked by MassDEP if, at any time, MassDEP determines that the Facility is violating any condition or part of this Plan Approval. This Plan Approval may be modified or amended when in the opinion of MassDEP a modification or amendment is necessary or appropriate to clarify the approval conditions or after consideration of a written request by the Permittee to amend the approval conditions. Any relaxation of an emission limit or a specific condition noted in this Plan Approval that would result in an increase in emission rates as established in this Plan Approval must be made in accordance with 310 CMR 7.02.
- C. **OTHER REGULATIONS** - This Plan Approval does not negate the responsibility of the owner/operator to comply with this or any other applicable federal, state, or local regulations now or in the future. Nor does this Plan Approval imply compliance with any other applicable federal, state or local regulation now or in the future.
- D. Pursuant to 310 CMR 7.01, 7.02, 7.09 and 7.10, should any nuisance condition(s), including but not limited to smoke, dust, odor or noise, occur as the result of the operation of the Facility, then the Permittee shall immediately take appropriate steps including shutdown, if necessary, to abate said nuisance condition(s).
- E. **ASBESTOS** - Should asbestos remediation/removal be required as a result of this Plan Approval, such asbestos remediation/removal shall be done in accordance with Regulation 310 CMR 7.15.
- F. **TESTING** -
  1. Any emission testing conducted to show compliance with the limitations in this Plan Approval must be conducted in accordance with the Environmental Protection Agency test methods as specified in the Code of Federal Regulations, Title 40, Part 60, Appendix A - Standards of Performance for New Stationary Sources or by another method correlated to the above method to the satisfaction of MassDEP and in accordance with the requirements noted in 310 CMR 7.13.
  2. In accordance with 310 CMR 7.13, MassDEP may require testing for any pollutants if deemed necessary to ascertain the emission rates and relationship to equipment design and operation. When informed in writing by MassDEP that stack testing is necessary to ascertain compliance with the Air Pollution Control Regulations or design approval provisions the Permittee shall conduct the required stack testing. Such stack testing shall be:
    - a) Conducted by a person knowledgeable in stack testing,
    - b) Conducted in accordance with procedures contained in a test protocol which has been approved by MassDEP, and

- c) In the presence of a representative of MassDEP when such is deemed necessary in accordance with 310 CMR 7.13.

#### G. RECORD KEEPING -

1. A record keeping system shall be established and continued on site by the Permittee. All records shall be maintained up-to-date such that twelve-month rolling period information is readily available for MassDEP examination. Record keeping shall include, at a minimum:
  - a) The initiation and completion dates for the proposed construction, reconstruction or alteration.
  - b) Compliance records sufficient to demonstrate that emissions of air contaminants have not exceeded what is allowed by this Plan Approval. An electronic version in Microsoft Excel of the MassDEP approved Reporting Form can be downloaded at: <http://www.mass.gov/dep/air/approvals/aqforms.htm#report>. Such records may include daily production records, raw material usage rates, fuel purchase receipts, emissions test results, monitoring equipment data and reports.
  - c) Maintenance: A record of routine maintenance activities performed on emission unit, control equipment and monitoring equipment including, at a minimum, the type or a description of the maintenance performed and the date and time the work was completed.
  - d) Malfunctions: A record of all malfunctions on emission unit, control equipment and monitoring equipment including, at a minimum: the date and time the malfunction occurred; a description of the malfunction and the corrective action taken; the date and time corrective actions were initiated; and the date and time corrective actions were completed and the emission unit returned to compliance.
2. All records shall be kept on site for five (5) years and shall be made available to MassDEP upon request.
3. Pursuant to the authority granted to MassDEP at 310 CMR 7.02, the Facility shall maintain a copy of this Plan Approval, and any subsequent modifications of this Plan Approval, on-site for as long as the Plan Approval is valid. The Plan Approval is valid until one of the following conditions occur: the equipment is dismantled or removed from the Facility, the Facility notifies MassDEP that the Plan Approval is no longer valid, the equipment is substantially reconstructed or altered and subject to 310 CMR 7.02, the Plan Approval is superseded by another Plan Approval, or MassDEP revokes the Plan Approval in accordance with 310 CMR 7.02. MassDEP may revoke, in accordance with 310 CMR 7.02, any Plan Approval if the actual construction has not begun within two years from the date of issuance or if, during the construction, the construction is suspended for the period of one year or more.

#### H. REPORTING -

1. The Permittee shall submit a Source Registration/Emission Statement Form to MassDEP on an annual or tri-annual basis as required by 310 CMR 7.12.
2. Any construction, substantial reconstruction or alteration, as described in 310 CMR 7.02, of equipment as noted within this Plan Approval application at this Facility shall be reported in writing to MassDEP 30 days prior to said construction, substantial reconstruction or alteration and on the next required source registration.
3. The Regional Bureau of Waste Prevention, Compliance and Enforcement office, must be notified by telephone, email, or fax as soon as possible (but no later than 24 hours) after the occurrence of any exceedance of an emission limit as noted within this Plan Approval OR any upsets or malfunctions to the Facility equipment, air pollution control equipment, or monitoring equipment which result in an excess emission to the air, a violation of any conditions of this Plan Approval and/or a condition of air pollution.

#### I. REMOVAL OF AIR POLLUTION CONTROL EQUIPMENT - Notwithstanding 310 CMR 7.02, no person shall cause, suffer, allow, or permit the removal, alteration or shall otherwise render inoperative any air

pollution control equipment or equipment used to monitor emissions which has been installed as a requirement of 310 CMR 7.00, other than for reasonable maintenance periods or unexpected and unavoidable failure of the equipment, provided that MassDEP has been notified of such failure, or in accordance with specific written approval of MassDEP.

- J. **MONITORING** - Equipment or emission monitoring systems installed for the purpose of documenting compliance with this Plan Approval shall be installed, calibrated, maintained and operated by the Permittee in sufficient manner to ensure continuous and accurate operations at all times.
- K. **COMPLIANCE ASSURANCE FEE** - Pursuant to 310 CMR 4.03, an annual fee, based on the Commonwealth's fiscal year, will be charged to your Facility to cover the cost of compliance activities performed by MassDEP, including registrations, report reviews, inspections, source registration reviews, etc. No fee shall be charged in the fiscal year that the permit is issued. If multiple air quality permits exist for a Facility, the Facility shall pay the single highest applicable fee. This fee does not include stack test fees.

### **VIII. APPEAL**

This Plan Approval is an action of MassDEP. If you are aggrieved by this action, you may request an adjudicatory hearing. A request for a hearing must be made in writing and postmarked within twenty-one (21) days of the date of issuance of this Plan Approval.

Under 310 CMR 1.01(6)(b), the request must state clearly and concisely the facts which are the grounds for the request, and the relief sought. Additionally, the request must state why the Plan Approval is not consistent with applicable laws and regulations. The hearing request along with a valid check payable to Commonwealth of Massachusetts in the amount of one hundred dollars (\$100.00) must be mailed to:

Commonwealth of Massachusetts  
Department of Environmental Protection  
P.O. Box 4062  
Boston, MA 02241

The request will be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver as described below.

The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority. MassDEP may waive the adjudicatory hearing filing fee for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file, together with the hearing request as provided above, an affidavit setting forth the facts believed to support the claim of undue financial hardship.

Should you have any questions concerning this Plan Approval, please contact Paul Dwiggins at (508) 767-2760.

Sincerely,

This final document copy is being provided to you electronically by the  
Department of Environmental Protection. A signed copy of this document  
is on file at the DEP office listed on the letterhead.

Roseanna E. Stanley  
Section Chief,  
Bureau of Waste Prevention

RES/PD

ecc: Yi Tian, Kim McCoy, MassDEP