



DEPARTMENT ORDER

Soleras Advanced Coatings, Ltd.
York County
Biddeford, Maine
A-1073-71-B-R

Departmental
Findings of Fact and Order
Air Emission License
Renewal

FINDINGS OF FACT

After review of the air emission license renewal application, staff investigation reports, and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 Maine Revised Statutes (M.R.S.) § 344 and § 590, the Maine Department of Environmental Protection (Department) finds the following facts:

I. REGISTRATION

A. Introduction

Soleras Advanced Coatings, Ltd. (Soleras) has applied to renew their Air Emission License for the operation of emission sources associated with their sputtering equipment and supplies manufacturing facility.

The equipment addressed in this license is located at 589 Elm Street, Biddeford, Maine.

B. Emission Equipment

The following equipment is addressed in this air emission license:

Process Equipment

Equipment	Pollution Control Equipment	Stack #
CB #1 Thermal Spray System	Baghouse	1

C. Definitions

Cleaning Activities means the use of solvents to remove contaminants including, but not limited to, adhesives, inks, paint, dirt, soil, oil, and grease from parts, products, tools, machinery, equipment, vessels, and work production related areas for a variety of reasons, including safety, operability, and to avoid product contamination; this includes activities such as wiping, flushing, or spraying. Examples of such activities may include, but are not limited to, the cleaning of spray booths, spray guns, and printing presses.

Industrial Cleaning Solvents means products containing VOC when used for cleaning activities applied to items and surfaces used in manufacturing, processing, mining, and refining or other manufacturing activities.

Records or Logs mean either hardcopy or electronic records.

D. Application Classification

All rules, regulations, or statutes referenced in this air emission license refer to the amended version in effect as of the date this license was issued.

The application for Soleras does not include the licensing of increased emissions or the installation of new or modified equipment. Therefore, the license is considered to be a renewal of currently licensed emission units only and has been processed through *Major and Minor Source Air Emission License Regulations*, 06-096 Code of Maine Rules (C.M.R.) ch. 115.

E. Facility Classification

The facility is licensed as follows:

- As a natural minor source of air emissions, because no license restrictions are necessary to keep facility emissions below major source thresholds for criteria pollutants; and
- As an area source of hazardous air pollutants (HAP), because the licensed emissions are below the major source thresholds for HAP.

II. **BEST PRACTICAL TREATMENT (BPT)**

A. Introduction

In order to receive a license, the applicant must control emissions from each unit to a level considered by the Department to represent Best Practical Treatment (BPT), as defined in *Definitions Regulation*, 06-096 C.M.R. ch. 100. Separate control requirement categories exist for new and existing equipment.

BPT for existing emissions equipment means that method which controls or reduces emissions to the lowest possible level considering:

- the existing state of technology;
- the effectiveness of available alternatives for reducing emissions from the source being considered; and
- the economic feasibility for the type of establishment involved.

B. Process Description

Soleras manufactures advanced material targets for sputtering applications and sputter hardware. Sputtering is a technique used to deposit thin films of a material onto a surface (the substrate). By first creating a gaseous plasma¹ (using argon gas, for example), and then accelerating the ions from the plasma into some source material (the target), the source material is eroded by the bombardment of the ions, causing neutral particles of the target material – individual atoms, clusters of atoms, or molecules – to be ejected from the surface of the target. These neutral particles travel in a straight line until they come into contact with something, such as other particles or a nearby surface. The nearby surface (the substrate) placed in the path of these ejected particles will become coated by a thin film of the source (target) material. In summary, a source (target) material is bombarded with ions, causing particles of the source (target) to be ejected. A specific substrate placed in the path of these ejected particles becomes coated with a layer of the source (target) material.

Some sputtering applications that utilize advanced material targets include the manufacturing of energy efficient low-E glass, electrochromic and smart glass, thin film photovoltaic panels, and advanced displays used in touch screen phones and tablet computers. Customers of Soleras are those facilities which use sputtering technology in the manufacturing of their product.

Targets have a base material for backing of the target substance, some of which are made of copper, chromium, indium, stainless steel, or some layered combination of two or more of these or similar metals. This facility makes specific product for each customer specific to each end application; thus, Soleras adapts their process, shapes, coatings, base substrates, etc. for each specific order.

Target material is applied in one of three ways, depending on the customer's needs and the intended application of the target: casting (molten recipe of metals, cast in a form resulting in approximately 0.75 in. of target material around the nickel-plated stainless-steel core), dipping, or spray coating. The spray coating is the process which triggers the air emission licensing requirement.

In spray coating, Soleras uses thermal spraying to coat sputtering targets. Thermal spraying is a coating process where heated metals are sprayed onto a surface. The coating thickness can be from as thin as 20 micrometers to as thick as several millimeters over a large area at high deposition rates. Soleras uses metals and alloys as coating materials, which are introduced to the process in either powder or wire form, heated to a molten or semi-molten state, and then accelerated toward substrates in the form of micrometer-size particles. The

¹ Plasma is a state of matter similar to gas in which a portion of the particles are ionized, generally through the addition of energy, the use of a strong electromagnetic field, or some other means. The presence of a non-negligible number of charge carriers (the ions) makes the plasma electrically conductive so that it responds strongly to electromagnetic fields. Plasma, therefore, has properties quite unlike those of solids, liquids, or gases and is considered a distinct state of matter.

metals are heated by plasma for metals powders and by electrical arc discharge for metal wire. Resulting coatings are formed by the accumulation of numerous sprayed particles.

Air pollutant emissions from this process are particulate matter emissions. All of the various metal coatings used in the thermal spraying process begin as solids.

Soleras also conducts small welding and abrasive blasting operations inside the facility with HEPA filtration technology for particulate control which exhausts inside the facility; therefore, they are not required to be included in the air emission license.

C. CB #1 Thermal Spray System

The facility's Thermal Spray System is a source of particulate matter (PM) emissions. At the time of this license, Soleras uses coating source material that contains zinc, aluminum, silicon, and nickel. Emissions from the thermal spray coating operation are discharged into a baghouse with 99.99% control efficiency for particulates 0.5 microns in diameter and larger.

The Thermal Spray System at Soleras does contain HAP material such as nickel in its coating operations. Based on emission factors for uncontrolled particulate HAP from welding operations in AP-42 Table 12.19-2, a conservative emission factor would be 2.5 lbs of uncontrolled particulate emissions per 1,000 lbs of source material. The particulate HAP emissions are further reduced by the baghouse by a conservative value of 99.9 %, yielding an annual total emission of particulate HAP emissions of under 10 lbs.

The previously licensed TAFE Dust Control System was replaced with a new Camfil Baghouse with improved fire control systems. Soleras has provided documentation which shows that the new baghouse system has the same control efficiency as the previous system and will still be considered BPT for PM control from the thermal spray operations at Soleras.

1. BPT Findings

- a. Emissions from the CB #1 Thermal Spray System shall vent to a baghouse at all times that the system is in operation, and all components of the CB #1 Thermal Spray System shall be maintained so as to prevent PM leaks.
 - b. Soleras shall keep records of baghouse failures and malfunctions and baghouse maintenance. All components of the Thermal Spray System shall be maintained so as to prevent PM leaks.
2. Visible emissions from the baghouse controlling PM emissions from the CB #1 Thermal Spray System shall not exceed an opacity of 10 percent on a six (6) minute block average basis. Soleras shall take corrective action if visible emissions from the baghouse exceeds five (5) percent opacity on a six (6) minute block average basis.
[06-096 C.M.R. ch. 101 (3)(B)(3)]

3. New Source Performance Standards (NSPS)

There are no standards from Environmental Protection Agency's (EPA's) New Source Performance Standards (NSPS) 40 C.F.R. Part 60 applicable to thermal spray coating systems using solid metals as the applied substance.

4. National Emission Standards for Hazardous Air Pollutants (NESHAP)

The CB#1 Thermal Spray System at Soleras is not subject to the NESHAP 40 C.F.R. Part 63, Subpart MMMM, *National Emission Standards for Hazardous Air Pollutants for Surface Coating of Miscellaneous Metal Parts and Products*, as Soleras is not a major source of HAP emissions per 40 C.F.R. § 63.3881(b).

The CB#1 Thermal Spray System at Soleras is not subject to the NESHAP 63 Subpart HHHHH, *National Emission Standards for Hazardous Air Pollutants: Miscellaneous Coating Manufacturing*, as Soleras is not a major source of HAP emissions per 40 C.F.R. § 63.7985(a)(1).

The CB#1 Thermal Spray System at Soleras is not subject to the NESHAP 40 C.F.R. Part 63, Subpart XXXXXX, *National Emission Standards for Hazardous Air Pollutants Area Source Standards for Nine Metal Fabrication and Finishing Source Categories*, as this process does not correspond to any of the source categories in 40 C.F.R. Part 63, Subpart XXXXXX, Table 1.

Because there are no hazardous air pollutants which exceed Major Source emissions levels, the CB#1 Thermal Spray System is not subject to any NESHAP requirements.

D. Facility Wide HAP and VOC Emissions Limit

Soleras uses various VOC and HAP containing compounds such as hexane and isopropyl alcohol for wipedown cleaning and nickel used in the sputtering target manufacturing process. In order to ensure that the emissions of VOC and HAP do not exceed any additional regulatory thresholds, Soleras shall, on a monthly and calendar year basis, calculate the total VOC and HAP emissions from materials used in its facility by using the following equations:

Monthly VOC Emissions = VOC content of material * material purchased

Monthly cleaning compound HAP Emissions = HAP content of material * material purchased

Monthly Thermal Spray Hap Emissions = HAP content of material * 2.5 lb/1,000 lb of Thermal Spray source material * 0.1%

The total VOC emissions from all materials used at the facility shall be limited to no more than 10 tons/year. The total HAP emissions from the facility shall be limited to 9.9 tons of any single HAP and 24.9 tons of all HAPs combined per calendar year.

Recordkeeping shall be comprised of material purchase records, material SDS documents which list VOC and HAP content of the material, and monthly and yearly calculations of VOC and HAP emissions.

E. Industrial Cleaning Solvents

Soleras uses industrial cleaning solvents in cleaning activities as those terms are defined in *Industrial Cleaning Solvents*, 06-096 C.M.R. ch. 166. The potential to emit from these activities (before control) is less than 3.0 tons of VOC per year. Therefore, Soleras is not subject to compliance standards of this chapter. [06-096 C.M.R. ch. 166, § 1]

Soleras shall maintain records of material purchase or use records sufficient to verify actual emissions from the cleaning activities do not exceed 3.0 ton of VOC per calendar year, in accordance with 06-096 C.M.R. ch. 166, § 5(B). The total VOC emissions from this are included in the facility wide annual VOC limit.

F. Fugitive Emissions

Visible emissions from a fugitive emission source (including stockpiles and roadways) shall not exceed 20% opacity on a five-minute block average basis.

G. General Process Emissions

Visible emissions from any general process source shall not exceed 20% opacity on a six-minute block average basis.

H. Annual Emissions

The table below provides an estimate of facility-wide annual emissions for the purposes of calculating the facility's annual air license fee and establishing the facility's potential to emit (PTE). Only licensed equipment is included, i.e., emissions from insignificant activities are excluded. Similarly, unquantifiable fugitive particulate matter emissions are not included except when required by state or federal regulations. Maximum potential emissions were calculated based on the following assumptions:

- Operating the CB #1 Thermal Spray System for 365 days/year;
- A facility-wide VOC limit of 10 tpy; and
- A facility-wide HAP limit of 9.9 tpy of any single HAP and 24.9 tpy of all HAPs combined.

This information does not represent a comprehensive list of license restrictions or permissions. That information is provided in the Order section of this license.

Total Licensed Annual Emissions for the Facility
Tons/year
(used to calculate the annual license fee)

	PM	PM ₁₀	SO ₂	NO _x	CO	VOC
CB #1 Thermal Spray System	0.1	0.1	--	--	--	--
Facility wide VOC Limit	--	--	--	--	--	10.0
Total TPY	0.1	0.1	--	--	--	10.0

Pollutant	Tons/year
Single HAP	9.9
Total HAP	24.9

III. AMBIENT AIR QUALITY ANALYSIS

The level of ambient air quality impact modeling required for a minor source is determined by the Department on a case-by case basis. In accordance with 06-096 C.M.R. ch. 115, an ambient air quality impact analysis is not required for a minor source if the total licensed annual emissions of any pollutant released do not exceed the following levels and there are no extenuating circumstances:

Pollutant	Tons/Year
PM ₁₀	25
SO ₂	50
NO _x	50
CO	250

The total licensed annual emissions for the facility are below the emission levels contained in the table above and there are no extenuating circumstances; therefore, an ambient air quality impact analysis is not required as part of this license.

This determination is based on information provided by the applicant regarding the expected construction and operation of the proposed emission units. If the Department determines that any parameter (e.g., stack size, configuration, flow rate, emission rates, nearby structures, etc.) deviates from what was included in the application, the Department may require Soleras to submit additional information and may require an ambient air quality impact analysis at that time.

ORDER

Based on the above Findings and subject to conditions listed below, the Department concludes that the emissions from this source:

- will receive Best Practical Treatment,
- will not violate applicable emission standards, and
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants Air Emission License A-1073-71-B-R subject to the following conditions.

Severability. The invalidity or unenforceability of any provision of this License or part thereof shall not affect the remainder of the provision or any other provisions. This License shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

STANDARD CONDITIONS

- (1) Employees and authorized representatives of the Department shall be allowed access to the licensee's premises during business hours, or any time during which any emissions units are in operation, and at such other times as the Department deems necessary for the purpose of performing tests, collecting samples, conducting inspections, or examining and copying records relating to emissions (38 M.R.S. § 347-C).
- (2) The licensee shall acquire a new or amended air emission license prior to commencing construction of a modification, unless specifically provided for in Chapter 115. [06-096 C.M.R. ch. 115]
- (3) Approval to construct shall become invalid if the source has not commenced construction within eighteen (18) months after receipt of such approval or if construction is discontinued for a period of eighteen (18) months or more. The Department may extend this time period upon a satisfactory showing that an extension is justified, but may condition such extension upon a review of either the control technology analysis or the ambient air quality standards analysis, or both. [06-096 C.M.R. ch. 115]
- (4) The licensee shall establish and maintain a continuing program of best management practices for suppression of fugitive particulate matter during any period of construction, reconstruction, or operation which may result in fugitive dust, and shall submit a description of the program to the Department upon request. [06-096 C.M.R. ch. 115]
- (5) The licensee shall pay the annual air emission license fee to the Department, calculated pursuant to Title 38 M.R.S. § 353-A. [06-096 C.M.R. ch. 115]

- (6) The license does not convey any property rights of any sort, or any exclusive privilege. [06-096 C.M.R. ch. 115]
- (7) The licensee shall maintain and operate all emission units and air pollution systems required by the air emission license in a manner consistent with good air pollution control practice for minimizing emissions. [06-096 C.M.R. ch. 115]
- (8) The licensee shall maintain sufficient records to accurately document compliance with emission standards and license conditions and shall maintain such records for a minimum of six (6) years. The records shall be submitted to the Department upon written request. [06-096 C.M.R. ch. 115]
- (9) The licensee shall comply with all terms and conditions of the air emission license. The filing of an appeal by the licensee, the notification of planned changes or anticipated noncompliance by the licensee, or the filing of an application by the licensee for a renewal of a license or amendment shall not stay any condition of the license. [06-096 C.M.R. ch. 115]
- (10) The licensee may not use as a defense in an enforcement action that the disruption, cessation, or reduction of licensed operations would have been necessary in order to maintain compliance with the conditions of the air emission license. [06-096 C.M.R. ch. 115]
- (11) In accordance with the Department's air emission compliance test protocol and 40 C.F.R. Part 60 or other method approved or required by the Department, the licensee shall:
 - A. Perform stack testing to demonstrate compliance with the applicable emission standards under circumstances representative of the facility's normal process and operating conditions:
 1. Within sixty (60) calendar days of receipt of a notification to test from the Department or EPA, if visible emissions, equipment operating parameters, staff inspection, air monitoring or other cause indicate to the Department that equipment may be operating out of compliance with emission standards or license conditions; or
 2. Pursuant to any other requirement of this license to perform stack testing.
 - B. Install or make provisions to install test ports that meet the criteria of 40 C.F.R. Part 60, Appendix A, and test platforms, if necessary, and other accommodations necessary to allow emission testing; and
 - C. Submit a written report to the Department within thirty (30) days from date of test completion. [06-096 C.M.R. ch. 115]

- (12) If the results of a stack test performed under circumstances representative of the facility's normal process and operating conditions indicate emissions in excess of the applicable standards, then:
- A. Within thirty (30) days following receipt of the written test report by the Department, or another alternative timeframe approved by the Department, the licensee shall re-test the non-complying emission source under circumstances representative of the facility's normal process and operating conditions and in accordance with the Department's air emission compliance test protocol and 40 C.F.R. Part 60 or other method approved or required by the Department; and
 - B. The days of violation shall be presumed to include the date of stack test and each and every day of operation thereafter until compliance is demonstrated under normal and representative process and operating conditions, except to the extent that the facility can prove to the satisfaction of the Department that there were intervening days during which no violation occurred or that the violation was not continuing in nature; and
 - C. The licensee may, upon the approval of the Department following the successful demonstration of compliance at alternative load conditions, operate under such alternative load conditions on an interim basis prior to a demonstration of compliance under normal and representative process and operating conditions.
[06-096 C.M.R. ch. 115]
- (13) Notwithstanding any other provisions in the State Implementation Plan approved by the EPA or Section 114(a) of the CAA, any credible evidence may be used for the purpose of establishing whether a person has violated or is in violation of any statute, regulation, or license requirement. [06-096 C.M.R. ch. 115]
- (14) The licensee shall maintain records of malfunctions, failures, downtime, and any other similar change in operation of air pollution control systems or the emissions unit itself that would affect emissions and that is not consistent with the terms and conditions of the air emission license. The licensee shall notify the Department within two (2) days or the next state working day, whichever is later, of such occasions where such changes result in an increase of emissions. The licensee shall report all excess emissions in the units of the applicable emission limitation. [06-096 C.M.R. ch. 115]
- (15) Upon written request from the Department, the licensee shall establish and maintain such records, make such reports, install, use and maintain such monitoring equipment, sample such emissions (in accordance with such methods, at such locations, at such intervals, and in such a manner as the Department shall prescribe), and provide other information as the Department may reasonably require to determine the licensee's compliance status.
[06-096 C.M.R. ch. 115]

- (16) The licensee shall notify the Department within 48 hours and submit a report to the Department on a quarterly basis if a malfunction or breakdown in any component causes a violation of any emission standard (38 M.R.S. § 605). [06-096 C.M.R. ch. 115]

SPECIFIC CONDITIONS

(17) **CB #1: Thermal Spray System**

- A. Emissions from the CB #1 Thermal Spray System shall vent to a baghouse at all times that the system is in operation, and all components of the CB #1 Thermal Spray System shall be maintained so as to prevent PM leaks. [06-096 C.M.R. ch. 115, BPT]
- B. To document maintenance of the baghouse, Soleras shall keep a maintenance log recording the date and location of all bag failures, malfunctions, and all routine maintenance. The maintenance log shall be kept on-site at the facility. [06-096 C.M.R. ch. 115, BPT]
- C. Visible emissions from the CB #1 Thermal Spray System baghouse shall not exceed 10% opacity on a six-minute block average basis. Soleras shall take corrective action if visible emissions from the baghouse exceed 5% opacity. [06-096 C.M.R. ch. 101(3)(B)(3)]

(18) **VOC and HAP Emissions Limit**

- A. Soleras shall on a monthly and calendar year basis, calculate the total VOC and HAP emissions from materials used in its facility by using the following equations:

Monthly VOC Emissions = VOC content of material * material purchased

Monthly cleaning compound HAP Emissions = HAP content of material * material purchased

Monthly Thermal Spray HAP Emissions = HAP content of material * 2.5lb/1,000lb of Thermal Spray source material * 0.1%

- B. The total VOC emissions from all materials used at the facility shall be limited to no more than 10 tons per year on a calendar year basis. The total HAP emissions from the facility shall be limited to 9.9 tons of any single HAP and 24.9 tons of all HAP combined on a calendar year basis.
- C. Soleras shall maintain records which document material purchase amounts, material SDS documents which list VOC and HAP content of the material, and monthly and yearly calculations of VOC and HAP emissions.

[06-096 C.M.R. ch. 115, BPT]

(19) Industrial Cleaning Solvents

Soleras shall maintain records of material purchase or use records sufficient to verify actual emissions from the cleaning activities do not exceed 3.0 ton of VOC per calendar year. [06-096 C.M.R. ch. 166, § 5(B)]

The total VOC emissions from this are included in the facility wide annual VOC limit.

(20) Fugitive Emissions

Visible emissions from a fugitive emission source (including stockpiles and roadways) shall not exceed 20% opacity on a five-minute block average basis. [06-096 C.M.R. ch. 101, § 3(C)]

(21) General Process Sources

Visible emissions from any general process source shall not exceed 20% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 101, § 3(B)(4)]

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- (22) If the Department determines that any parameter value pertaining to construction and operation of the proposed emissions units, including but not limited to stack size, configuration, flow rate, emission rates, nearby structures, etc., deviates from what was submitted in the application or ambient air quality impact analysis for this air emission license, Soleras may be required to submit additional information. Upon written request from the Department, Soleras shall provide information necessary to demonstrate AAQS will not be exceeded, potentially including submission of an ambient air quality impact analysis or an application to amend this air emission license to resolve any deficiencies and ensure compliance with AAQS. Submission of this information is due within 60 days of the Department's written request unless otherwise stated in the Department's letter.
[06-096 C.M.R. ch. 115, § 2(O)]

DONE AND DATED IN AUGUSTA, MAINE THIS 4th DAY OF JANUARY, 2023.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY:  for
MELANIE LOYZIM, COMMISSIONER

The term of this license shall be ten (10) years from the signature date above.

[Note: If a renewal application, determined as complete by the Department, is submitted prior to expiration of this license, then pursuant to Title 5 M.R.S. § 10002, all terms and conditions of the license shall remain in effect until the Department takes final action on the license renewal application.]

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: 9/15/22

Date of application acceptance: 9/19/22

Date filed with the Board of Environmental Protection:

This Order prepared by Chris Ham, Bureau of Air Quality.

