



Commonwealth of Massachusetts  
Executive Office of Energy & Environmental Affairs

## Department of Environmental Protection

Central Regional Office • 8 New Bond Street, Worcester MA 01606 • 508-792-7650

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Governor

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Secretary

DAVID W. CASH  
Commissioner

December 17, 2014

Mr. Bruce Watkins  
Karl Storz Endovision, Inc.  
91 Carpenter Hill Road  
Charlton, MA 01507

**RE: Charlton**  
Transmittal No.: X253384  
Application No.: CE-12-035  
Class: SM-25  
FMF No.: 182550  
**AIR QUALITY PLAN APPROVAL**

Dear Mr. Watkins:

The Massachusetts Department of Environmental Protection (“MassDEP”), Bureau of Waste Prevention, has reviewed your Non-major Comprehensive Plan Application (“Application”) listed above. This Application concerns the manufacture of flexible fiber optic imaging devices at your Facility located at 91 Carpenter Hill Road in Charlton, Massachusetts (“Facility”). The Application bears the seal and signature of Christopher Walton, Massachusetts Registered Professional Engineer Number 39510.

This Application was submitted in accordance with 310 CMR 7.02 Plan Approval and Emission Limitations as contained in 310 CMR 7.00 “Air Pollution Control” regulations adopted by MassDEP pursuant to the authority granted by Massachusetts General Laws, Chapter 111, Section 142 A-N, Chapter 21C, Section 4 and 6, and Chapter 21E, Section 6. MassDEP’s review of your Application has been limited to air pollution control regulation compliance and does not relieve you of the obligation to comply with any other regulatory requirements.

MassDEP has determined that the Application is administratively and technically complete and that the Application is in conformance with the Air Pollution Control regulations and current air pollution control engineering practice, and hereby grants this **Plan Approval** for said Application, as submitted, subject to the conditions listed below.

Please review the entire Plan Approval, as it stipulates the conditions with which the Facility owner/operator (“Permittee”) must comply in order for the Facility to be operated in compliance with this Plan Approval.

## **1. DESCRIPTION OF FACILITY AND APPLICATION**

Karl Storz Endovision, Inc. (“KSE”) owns and operates an optical instrument manufacturing facility (“Facility”) that began operations in 1992. In December 20, 2012, KSE notified the MassDEP that the Facility was operating without an Air Quality Plan Approval. KSE and MassDEP entered into an Administrative Consent Order with Penalty (ACOP-CE-14-9001-27-NT) on March 18, 2014. The ACOP required that KSE submit an Air Quality Plan Approval application to MassDEP. On December 23, 2013, KSE submitted a revised Air Quality Plan Approval application for the operation of the manufacturing equipment and the associated ambient air emissions.

The Facility manufactures a variety of flexible fiber optic imaging devices that are used for both medical (i.e. endoscopic) and industrial (i.e. boroscopic) imaging purposes. Processes included in the manufacture of these devices are: glass melting and billet production, glass fiber heating and drawing, fiber bundle production, glass tip polishing and imaging device assembly and testing. The Facility is required to have an Air Quality Plan Approval because it emits Volatile Organic Compound (VOC), hydrocarbon (HYC), Halogenated Organic Compound (HOC) and hazardous air pollutant (HAP) emissions to the ambient air. These emissions are emitted to the ambient air primarily through its general ventilation system and not through individual stacks. VOC emissions consist of isopropanol (IPA) and methanol. HYC emissions consist of acetone. HAPs emitted from the Facility consist of hydrochloric acid (HCL), hydrofluoric acid (HF), and methanol. This Facility is an area source of HAPs and a non-major source of criteria air pollutants.

Leaded glass is not manufactured on site, although leaded glass is utilized in the Glass Melt/Billet Production Area. Lead particles that may be released during wet saw, grind and polish processes are suspended in wet slurry and disposed of as hazardous waste. There are no emissions to the ambient air of lead.

The Facility operates a Caterpillar emergency diesel engine rated at 500 kilowatts (Kw) installed in 1992 that is operated in compliance with 310 CMR 7.03 (10). This unit is a Reciprocating Internal Combustion Engine (RICE) subject to 40 CFR 63, Subpart ZZZZ- National Emission Standards for Hazardous Air Pollutants Stationary Reciprocating Internal Combustion Engines (“RICE”). This emergency diesel engine was installed before July 11, 2005 and is therefore exempt from the NSPS for Stationary Compression Ignition Internal Combustion Engines contained in 40 CFR 60, Subpart IIII.

Each of the boilers at KSE has a rated fuel input capacity of less than 10 million British Thermal Units per hour (Btu/hr) and is exempt from the NSPS for Small Industrial, Commercial, Institutional steam generation units as specified by 40 CFR 60, Subpart Dc. The boilers at KSE are also exempt from the requirements of 40 CFR 63, Subpart JJJJJ National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial and Institutional Boilers located at area sources because they meet the definition of a hot water heater.

The boilers and the emergency diesel engines are not regulated by this Plan Approval.

Additionally, KSE is not subject to the requirements of the New Source Performance Standards (NSPS) for Glass Manufacturing Plants contained in 40 CFR, Subpart CC as the facility does not operate any fuel-fired glass melting furnaces and doesn't have the capacity to process five tons of glass per day.

MassDEP has determined that best management practices (BMPs) to minimize emissions and a restriction to limit VOCs, HCs and HAPs emissions is Best Available Control Technology (BACT) for this Facility.

## 2. EMISSION UNIT (EU) IDENTIFICATION

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

<b>Table 1</b>			
<b>EU#</b>	<b>Description</b>	<b>Design Capacity</b>	<b>Pollution Control Device (PCD)</b>
1	Light Guide Light Cable Process (LGLC) solvent application by hand	NA	NA
2	Glass Melt / Glass Manufacturing	NA	NA
3	Glass Acid Etching	NA	NA
4	Heated Solvent Degreasing	NA	NA
5	Solvent Cleaning-hand operations	NA	NA
6	Pad Printing	NA	NA

**Table 1 Key:**

EU# = Emission Unit Number

NA= Not applicable

### 3. APPLICABLE REQUIREMENTS

#### A. OPERATIONAL, PRODUCTION and EMISSION LIMITS

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

<b>Table 2</b>				
<b>EU#</b>	<b>Operational / Production Limit</b>	<b>Air Contaminant</b>	<b>Emission Limit<sup>4</sup></b>	
			<b>Monthly (TPM)<sup>2</sup></b>	<b>Annual (TPY)<sup>3</sup></b>
1-6	Isopropanol usage is limited to 7,200 lbs /yr <sup>1</sup>	VOC	1.4	7.0
		Single HAP	0.4	2.0
		Combined HAP	0.4	2.0
		HYC (acetone)	0.4	2.0
		HOC	0.1	0.5
		Opacity	0%	

**Table 2 Key:**

EU# = Emission Unit Number  
 HAP (single) = Maximum single Hazardous Air Pollutant  
 HAP (combined) = Combined Hazardous Air Pollutants  
 HOC = Halogenated Organic Compounds  
 HYC = Hydrocarbon (acetone)  
 Lbs/yr = Pounds per rolling consecutive 12-month period  
 TPM = Tons per month  
 TPY = Tons per rolling consecutive 12-month period  
 VOC = Volatile Organic Compounds

**Table 2 Notes:**

1 = Annual IPA usages are based on a rolling consecutive 12 month period  
 2 = Monthly emissions are calculated based on a calendar month  
 3 = Annual emissions are calculated based on a rolling consecutive 12 month period  
 4 = 100 % of VOC, HOC, HYC, and HAP usages are assumed to be emitted to the atmosphere, unless it is explicitly demonstrated by KSE that credit can be taken via other modes of disposal. KSE can take credit for VOC, HOC, HYC, and HAP shipped off-site as hazardous waste provided that the volume of hazardous waste and the VOC, HOC, HYC, and HAP content of the waste is appropriately documented monthly.

#### B. COMPLIANCE DEMONSTRATION

The Permittee is subject to, and shall comply with, the monitoring, testing, record keeping, and reporting requirements as contained in Tables 3, 4, and 5:

<b>Table 3</b>	
<b>EU#</b>	<b>Monitoring and Testing Requirements</b>
Facility Wide	1. The Permittee shall monitor all operations to ensure sufficient information is available to comply with 310 CMR 7.12 Source Registration.
	2. If and when MassDEP requires it, the Permittee shall conduct emission testing in accordance with USEPA Reference Test Methods and Regulation 310 CMR 7.13.

**Table 3 Key:**

CMR = Code of Massachusetts  
 Regulations  
 EU# = Emission Unit Number

<b>Table 4</b>	
<b>EU#</b>	<b>Record Keeping Requirements</b>
1-6	<p>1. The Permittee shall maintain adequate records of the actual air contaminants emitted for the purposes of demonstrating compliance with the monthly and annual emissions limits identified in Table 2, above. The emission tracking system will contain, at a minimum, a record of the following:</p> <ul style="list-style-type: none"> <li>a) Quantity (pounds) of each chemical mixture containing VOC, HOC, HYC and/ or HAP used per month,</li> <li>b) Quantity (pounds) of glass billets produced per month,</li> <li>c) VOC/ HAP content (% weight) and name of each VOC/HAP containing mixture,</li> <li>d) Individual HAP emitted during each rolling consecutive 12-month period and calendar month,</li> <li>e) Combined HAP emitted during each rolling consecutive 12-month period and calendar month,</li> <li>f) Total VOC emitted during each rolling consecutive 12-month period and calendar month,</li> <li>g) Total HYC emitted during each rolling consecutive 12-month period and calendar month,</li> <li>h) Total HOC emitted during each consecutive 12-month period, and calendar month</li> <li>i) Volumes/weight percentage of hazardous waste shipped monthly and the HOC, HYC, VOC, HAP content by weight of each shipment.</li> </ul>

1-6	2. The Permittee shall compile records no later than the 15 <sup>th</sup> day following each month. An electronic version of the MassDEP approved record keeping form, in Microsoft Excel format, can be downloaded at <a href="http://www.mass.gov/eea/agencies/massdep/air/approvals/limited-emissions-record-keeping-and-reporting.html#WorkbookforReportingOn-SiteRecordKeeping">http://www.mass.gov/eea/agencies/massdep/air/approvals/limited-emissions-record-keeping-and-reporting.html#WorkbookforReportingOn-SiteRecordKeeping</a>
	3. The Permittee shall maintain a copy of the Good Housekeeping Plan on site at all times.
	4. The Permittee shall maintain records of monitoring and testing as required by Table 3.
	5. The Permittee shall maintain a copy of this Plan Approval, underlying Application and the most up-to-date SOMP for the EU(s) approved herein on-site.
	6. The Permittee shall maintain a record of routine maintenance activities performed on all process equipment associated with VOC, HOC, HYC, and HAP emissions. The records shall include, at a minimum, the type or a description of the maintenance performed and the date and time the work was completed.
	7. The Permittee shall maintain a record of all malfunctions affecting air contaminant emission rates on the approved EU(s) and associated equipment. At a minimum, the records shall include: date and time the malfunction occurred; description of the malfunction; corrective actions taken; the date and time corrective actions were initiated and completed; and the date and time emission rates and monitoring equipment returned to compliant operation.
	8. The Permittee shall maintain records to ensure sufficient information is available to comply with 310 CMR 7.12 Source Registration.
	9. The Permittee shall maintain records required by this Plan Approval on-site for a minimum of five (5) years.
	10. The Permittee shall make records required by this Plan Approval available to MassDEP and USEPA personnel upon request.

**Table 4 Key:**

% = percentage

EU# = Emission Unit Number

HAP = Hazardous Air Pollutant

HOC = Halogenated Organic Compound

HYC = Hydrocarbon

SOMP = Standard Operating and Maintenance Procedure

PCD = Pollution Control Device

VOC = Volatile Organic Compound

USEPA = United States Environmental Protection Agency

<b>Table 5</b>	
<b>EU#</b>	<b>Reporting Requirements</b>
1-6	<ol style="list-style-type: none"> <li>1. The Permittee shall submit to MassDEP all information required by this Plan Approval over the signature of a “Responsible Official” as defined in 310 CMR 7.00 and shall include the Certification statement as provided in 310 CMR 7.01(2)(c).</li> <li>2. The Permittee shall notify the Central Regional Office of MassDEP, BWP Permit Chief by telephone: 508-767-2845, email: CERO.Air@massmail.state.ma.us or fax: 508-792-7621, as soon as possible, but no later than three (3) business days after discovery of an exceedance(s) of Table 2 requirements. A written report shall be submitted to the Permit Chief at MassDEP within ten (10) business days thereafter and shall include: identification of exceedance(s), duration of exceedance(s), reason for the exceedance(s), corrective actions taken, and action plan to prevent future exceedance(s).</li> <li>3. The Permittee shall report <u>annually</u> to MassDEP, in accordance with 310 CMR 7.12, all information as required by the Source Registration/Emission Statement Form. Specifically, all acid, HAP, HOC and VOC emissions shall be reported. The Permittee shall note therein any minor changes or exempt equipment (under 310 CMR 7.02(2) (e), 7.03, 7.26, etc.), which did not require Plan Approval. The Permittee may petition MassDEP for written approval after three (3) years from the date of this Plan Approval to change the reporting frequency to triennial submittals.</li> <li>4. The Permittee shall provide a copy to MassDEP of any record required to be maintained by this Plan Approval within 30 days from MassDEP’s request.</li> <li>5. The Permittee shall submit to MassDEP for approval a stack emission pretest protocol, at least 30 days prior to emission testing, for emission testing as defined in Table 3 Monitoring and Testing Requirements.</li> <li>6. The Permittee shall submit to MassDEP a final stack emission test results report, within 45 days after emission testing, for emission testing as defined in Table 3 Monitoring and Testing Requirements.</li> </ol>

**Table 5 Key:**

EU# = Emission Unit Number      HYC = Hydrocarbon  
 HAP = Hazardous Air Pollutant    VOC = Volatile Organic Compound  
 HOC = Halogenated Organic  
 Compound

**4. SPECIAL TERMS AND CONDITIONS**

A. The Permittee is subject to, and shall comply with, the Special Terms and Conditions as contained in Table 6 below:

<b>Table 6</b>	
<b>EU#</b>	<b>Special Terms and Conditions</b>
1-6	<ol style="list-style-type: none"> <li>1. The Permittee shall assume that 100% of all VOC, HOC, HYC and/or HAP containing products are emitted to the atmosphere, unless it is explicitly demonstrated through testing that credit can be taken via proper disposal.</li> <li>2. The Permittee shall, within 35 calendar days of this Plan Approval, develop a written Good Housekeeping Plan (“Plan”) that incorporates best management practices (BMPs) for the usage reduction of hazardous raw materials, minimization of air emissions of VOC, HAPs, HOCs and HYCs. The Plan shall include, but is not limited to, properly covering and managing containers holding VOC, HYC, HAPs and HOCs mixtures, such as acid baths, and degreasers. The Plan shall also include a continuous improvement program to evaluate substitutions or process modifications that will reduce emissions and training protocol that educates workers on procedures to minimize the generation of fugitive VOC, HAP, HOC and HYC emissions from all processes. The Plan must be a part of the training protocol, remain on site at all times, and be readily available to employees.</li> </ol>

**Table 6 Key:**

EU# = Emission Unit Number

VOC = Volatile Organic Compounds

HAP = Hazardous Air Pollutant

HOC = Halogenated organic compound

HYC = Hydrocarbon

B. The Permittee shall install and use an exhaust stack, as required in Table 7, on each of the Emission Units 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.”

C. The Permittee shall install and utilize exhaust stacks with the following parameters, as contained in Table 7, for the Emission Units that are regulated by this Plan Approval:



<b>Table 7</b>				
<b>EU#</b>	<b>Stack Height Above Ground (feet and inches)</b>	<b>Stack Inside Exit Dimensions (inches)</b>	<b>Stack Gas Exit Velocity Range (feet per minute)</b>	<b>Stack Gas Exit Temperature Range (°F)</b>
2	40	12	100-135	64-90

**Table 7 Key:**

EU# = Emission Unit Number

°F = Degree Fahrenheit

## **5. GENERAL CONDITIONS**

The Permittee is subject to, and shall comply with, the following general conditions:

- A. 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).
- B. If asbestos remediation/removal will occur as a result of the approved construction, reconstruction, or alteration of this Facility, the Permittee shall ensure that all removal/remediation of asbestos shall be done in accordance with 310 CMR 7.15 in its entirety and 310 CMR 4.00.
- C. If construction or demolition of an industrial, commercial or institutional building will occur as a result of the approved construction, reconstruction, or alteration of this Facility, the Permittee shall ensure that said construction or demolition shall be done in accordance with 310 CMR 7.09(2) and 310 CMR 4.00.
- D. Pursuant to 310 CMR 7.01(2)(b) and 7.02(7)(b), the Permittee shall allow MassDEP and / or USEPA personnel access to the Facility, buildings, and all pertinent records for the purpose of making inspections and surveys, collecting samples, obtaining data, and reviewing records.
- E. This Plan Approval does not negate the responsibility of the Permittee to comply with any other applicable Federal, State, or local regulations now or in the future.
- F. Should there be any differences between the Application and this Plan Approval, the Plan Approval shall govern.

- G. Pursuant to 310 CMR 7.02(3)(k), MassDEP may revoke this Plan Approval if the construction work is not commenced within two years from the date of issuance of this Plan Approval, or if the construction work is suspended for one year or more.
- H. This Plan Approval may be suspended, modified, or revoked by MassDEP if MassDEP determines that any condition or part of this Plan Approval is being violated.
- I. This Plan Approval may be modified or amended when in the opinion of MassDEP such is necessary or appropriate to clarify the Plan Approval conditions or after consideration of a written request by the Permittee to amend the Plan Approval conditions.
- J. Pursuant to 310 CMR 7.01(3) and 7.02(3) (f), the Permittee shall comply with all conditions contained in this Plan Approval. Should there be any differences between provisions contained in the General Conditions and provisions contained elsewhere in the Plan Approval, the latter shall govern.

## **6. MASSACHUSETTS ENVIRONMENTAL POLICY ACT**

MassDEP has determined that the filing of an Environmental Notification Form (ENF) with the Secretary of Energy & Environmental Affairs, for air quality control purposes, was not required prior to this action by MassDEP. Notwithstanding this determination, the Massachusetts Environmental Policy Act (MEPA) and 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 an Environmental Impact Report (EIR) at a later time.

## **7. APPEAL PROCESS**

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 the 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 02211

This 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.

Enclosed is a stamped approved copy of the application submittal.

Should you have any questions concerning this Plan Approval, please contact Maria L'Annunziata by telephone at 508.767.2748, or in writing at the letterhead address.

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Roseanna E. Stanley  
Acting Permit Chief  
Bureau of Waste Prevention

Enclosure

ecc: Charlton Board of Health/Dept of Health  
Charlton Fire Department  
MassDEP/Boston - Yi Tian  
Capaccio Environmental Engineering