



John R. Kasich, Governor
Mary Taylor, Lt. Governor
Scott J. Nally, Director

10/10/2013

Matt Moyer
GE Lighting Inc - Bucyrus Lamp Plant
1250 South Walnut Street
Bucyrus, OH 44820

RE: FINALAIR POLLUTION PERMIT-TO-INSTALL
Facility ID: 0317010010
Permit Number: P0114046
Permit Type: Administrative Modification
County: Crawford

Certified Mail

No	TOXIC REVIEW
No	PSD
No	SYNTHETIC MINOR TO AVOID MAJOR NSR
No	CEMS
No	MACT/GACT
No	NSPS
No	NESHAPS
No	NETTING
No	MAJOR NON-ATTAINMENT
No	MODELING SUBMITTED
No	MAJOR GHG
Yes	SYNTHETIC MINOR TO AVOID MAJOR GHG

Dear Permit Holder:

Enclosed please find a final Ohio Environmental Protection Agency (EPA) Air Pollution Permit-to-Install (PTI) which will allow you to install or modify the described emissions unit(s) in a manner indicated in the permit. Because this permit contains several conditions and restrictions, we urge you to read it carefully. Because this permit contains conditions and restrictions, please read it very carefully. In this letter you will find the information on the following topics:

- **How to appeal this permit**
- **How to save money, reduce pollution and reduce energy consumption**
- **How to give us feedback on your permitting experience**
- **How to get an electronic copy of your permit**

How to appeal this permit

The issuance of this PTI is a final action of the Director and may be appealed to the Environmental Review Appeals Commission pursuant to Section 3745.04 of the Ohio Revised Code. The appeal must be in writing and set forth the action complained of and the grounds upon which the appeal is based. The appeal must be filed with the Commission within thirty (30) days after notice of the Director's action. The appeal must be accompanied by a filing fee of \$70.00, made payable to "Ohio Treasurer Josh Mandel," which the Commission, in its discretion, may reduce if by affidavit you demonstrate that payment of the full amount of the fee would cause extreme hardship. Notice of the filing of the appeal shall be filed with the Director within three (3) days of filing with the Commission. Ohio EPA requests that a copy of the appeal be served upon the Ohio Attorney General's Office, Environmental Enforcement Section. An appeal may be filed with the Environmental Review Appeals Commission at the following address:

Environmental Review Appeals Commission
77 South High Street, 17th Floor
Columbus, OH 43215

How to save money, reduce pollution and reduce energy consumption

The Ohio EPA is encouraging companies to investigate pollution prevention and energy conservation. Not only will this reduce pollution and energy consumption, but it can also save you money. If you would like to learn ways you can save money while protecting the environment, please contact our Office of Compliance Assistance and Pollution Prevention at (614) 644-3469. Additionally, all or a portion of the capital expenditures related to installing air pollution control equipment under this permit may be eligible for financing and State tax exemptions through the Ohio Air Quality Development Authority (OAQDA) under Ohio Revised Code Section 3706. For more information, see the OAQDA website: www.ohioairquality.org/clean_air

How to give us feedback on your permitting experience

Please complete a survey at www.epa.ohio.gov/survey.aspx and give us feedback on your permitting experience. We value your opinion.

How to get an electronic copy of your permit

This permit can be accessed electronically via the eBusiness Center: Air Services in Microsoft Word format or in Adobe PDF on the Division of Air Pollution Control (DAPC) Web page, www.epa.ohio.gov/dapc by clicking the "Search for Permits" link under the Permitting topic on the Programs tab.

If you have any questions, please contact Ohio EPA DAPC, Northwest District Office at (419)3528461 or the Office of Compliance Assistance and Pollution Prevention at (614) 644-3469.

Sincerely,



Michael W. Ahern, Manager

Permit Issuance and Data Management Section, DAPC

Cc: U.S. EPA
Ohio EPA-NWDO; Canada



Response to Comments

Facility ID:	0317010010
Facility Name:	GE Lighting Inc - Bucyrus Lamp Plant
Facility Description:	Fluorescent Lamp Manufacturing
Facility Address:	GE Company - Bucyrus Lamp Plant 1250 South Walnut Street Bucyrus, OH 44820 Crawford County
Permit:	P0114046, Permit-To-Install - Administrative Modification
A public notice for the draft permit issuance was published in the Ohio EPA Weekly Review and appeared in the Bucyrus Telegraph-Forum on 08/01/2013. The comment period ended on 08/31/2013.	
Hearing date (if held)	
Hearing Public Notice Date (if different from draft public notice)	

The following comments were received during the comment period specified. Ohio EPA reviewed and considered all comments received during the public comment period. By law, Ohio EPA has authority to consider specific issues related to protection of the environment and public health. Often, public concerns fall outside the scope of that authority. For example, concerns about zoning issues are addressed at the local level. Ohio EPA may respond to those concerns in this document by identifying another government agency with more direct authority over the issue.

In an effort to help you review this document, the questions are grouped by topic and organized in a consistent format. PDF copies of the original comments in the format submitted are available upon request.

Comments were received from GE and from USEPA. The company's comments concerned the use of lbsNOx or CO/1000 bulbs and a reference in b)(2)f. to the uncontrolled emissions rate for PM10, both for emissions unit P035. USEPA's comments concerned

1. Topic: GE's comment concerning the use of lbsNOx or CO/1000 bulbs for emissions unit P035.

- a. Comment: "For Emission Unit P035, L-7, High Speed Horizontal Line III (HSH III), BAT required limits for NOx and CO are set in section f) Testing Requirements on the basis of the number of lamps produced (i.e. "0.37 lb CO/1000 bulbs from natural gas combustion") and on a rolling 12-month period. As described in correspondence and discussions with you and Mr. Jan Tredway, the basis of rolling 12-month is appropriate for this emission unit however the number of lamps produced basis presents a challenge to maintain necessary records and demonstrate compliance with the BAT limits. The emission factors GE presented in the permit application are based on maximum throughput of lamps per hour for both combustion of natural gas and oxidation ("combustion") of nitrogen containing species in the coating material at high temperatures. The combustion of natural gas on the production line is consistent, regardless of actual production levels.

If production level drops below maximum (such as due to lamp breakage or required short duration maintenance) the natural gas combustion may continue while less than the maximum lamps are produced, resulting in an exceedance of this limitation, but not mass based hourly estimates for emissions provided with the permit application. To address this scenario, GE is recommending that NOx and CO emissions on this emission unit be limited similarly to PM and OC. Both of these parameters are



based on a rolling 12-month basis. This approach for NO_x and CO would alleviate the situation described here.

GE recommends the following changes to the permit:

In section b)(1), Applicable Emissions Limitations and/or Control Requirements, 0.47 lbNO_x/1000 bulbs from natural gas combustion and binder combustion, to 17.5 tons NO_x/rolling, 12-month period from natural gas combustion; and 0.37 lb CO/1000 bulbs from natural gas combustion, to 12.97 tons CO/rolling 12-month period from natural gas combustion.”

GE further recommended that in section f)(1)b. and f)(1)e., the Applicable Compliance Method be changed to show calculations consistent with the above recommended limits.

“GE recognizes that the basis for these limits derive from Senate Bill 265 and subsequent guidance issued by Ohio EPA regarding implementation of that bill. The approach presented here is consistent with guidance provided by Ohio EPA regarding “BAT Requirements for Permit Applications Filed On or After August 3, 2009” in both the current December 10, 2009 version and the proposed May 1, 2013 draft for comment. Specifically, this approach meets point 4 in the Determining the Appropriate Method to Express BAT section of that guidance. Additionally, it is consistent with the methodology to demonstrate compliance with other contaminants associated with Emission Unit P035.”

- b. Response: Ohio EPA concurs with the suggested changes and has revised the permit accordingly.

2. Topic: GE’s comment concerning a reference in b)(2)f. to the uncontrolled emissions rate for PM10 for emissions unit P035.

- a. Comment: “For Emission Unit P035, condition b)(2)(f) indicates that the PTE of PM10 is 0.04 tons per year (tpy), and further notes that it is an uncontrolled emission rate. This is not the case. The rate of 0.04 tpy is a controlled emission rate. Please change the 0.04 to the uncontrolled emission rate of 4.49 tpy, or remove the sentence in that paragraph indicating that the potential to emit does not take into account the use of a baghouse.”
- b. Response: Ohio EPA concurs with the suggested changes and has revised the permit accordingly. In order to do this Ohio EPA has established PM10 limits of 0.01 lbs/hr and 0.04 tons/yr and use of a baghouse under OAC rule 3745-31-05(F).

3. Topic: USEPA’s comment concerning documentation of the reason why emission factors were amended.

- a. Comment: “The permit authorization cites that the emission factors for P007, P008, and P035 have been amended in the permit. The permit does not provide any detail as to why these emission factors were amended and the origin of the new emission factors. Please clarify why the emission factors were amended and where the new emission factors originated from.”
- b. Response: According to a letter submitted with the application, GE has recently undergone an assessment of emission factors relating to emissions units P007, P008, and P035. The evaluation of emission factor data included a comparison of current potential emissions factors for coating processes and combustion sources on the aforementioned emission sources. Through evaluation of facility manufacturing, equipment, material records, and improved knowledge of processes resulting in emissions to the atmosphere, several updates were identified in the potential emission factors that make up the overall emission factor for each of these sources.



Each referenced source is a High Speed Horizontal Lamp Assembly Line, and each consists of multiple steps at which emissions may occur. All of the steps in the emission source were evaluated to update the potential emission factor, and the updated emission factors are reflected in the Applicable Emissions Limitations and/or Control Requirements, Monitoring and/or Recordkeeping requirements, and Testing Requirement section of each permit. Notable updates include the correction of emissions resulting from base cementing operation to reflect higher usage rates than previously identified (including emissions from basefill lube operations); lower emission rates resulting from material changes on one group; phosphor coating process and VOC content; and changes to natural gas throughput capacity based on equipment design documentation review and gas heat content alignment with AP-42 Natural Gas Combustion guidance.

4. Topic: USEPA's comment asking for an explanation of why some emissions limits have increased when emissions factors have decreased.

- a. Comment: "Emission limitations for P007, P008, and P035 have been increased while the emission factors used to calculate compliance have been lowered. Please clarify why the emission limitation would need to increase if the emission factors have decreased."
- b. Response: As noted above, some of the corrections included a request for increased emissions limits, such as that resulting from the base cementing operation to reflect higher usage rates than previously identified (including emissions from basefill lube operations). These updated emission factors and increased permit limits requested are not associated with changes or physical modifications to the equipment comprising the emissions unit. Instead, they are associated with a more thorough examination of the processes and material usages at each emissions point on the production line, and small adjustments to the potential emissions to reflect the updated information. Calculations done by GE show no actual emissions greater than previously permitted limitations.

5. Topic: USEPA's comment concerning the removal of permit terms and conditions for the "prior to T8 conversion" scenario, for P007.

- a. Comment: "The permit includes the removal of requirements for P007, specifically, for those emissions generated 'prior to T8 conversion.' The removal of these conditions were not included in the permit description or explained in the permit strategy write up. Please provide explanation for the removal of these conditions."
- b. Response: Ohio EPA concurs that an explanation should have been provided in the permit strategy write up. The explanation is that the T8 conversion has already occurred on emissions unit P007, and therefore the terms and conditions applicable to P007 prior to the T8 conversion are no longer needed.

6. Topic: USEPA's comment concerning the lack of testing to verify the 99% control efficiency for the baghouse associated with P007.

- a. Comment: "On page 23 of 46 of the permit, the testing requirements to show compliance with particulate emission limitations for P007 are described. The permit notes that a control efficiency of 99% is assumed for the baghouse. The permit does not require testing at the baghouse to verify the 99% control efficiency. Periodic testing of the baghouse(s) should be included to ensure compliance with the limitations."



- b. Response: Ohio EPA typically does not require testing on baghouses where the uncontrolled emissions are less than 5 tons per year.



FINAL

Division of Air Pollution Control
Permit-to-Install
for
GE Lighting Inc - Bucyrus Lamp Plant

Facility ID:	0317010010
Permit Number:	P0114046
Permit Type:	Administrative Modification
Issued:	10/10/2013
Effective:	10/10/2013



Division of Air Pollution Control
Permit-to-Install
for
GE Lighting Inc - Bucyrus Lamp Plant

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Authorization

Facility ID: 0317010010
Facility Description: Fluorescent Lamp Manufacturing
Application Number(s): A0047032
Permit Number: P0114046
Permit Description: Administrative modification to amend emission factors for each of the three existing HSH assembly groups, change monitoring frequency for several emissions units and establish an annual plant-wide natural gas usage restriction to limit emissions of Greenhouse Gases below major source levels.
Permit Type: Administrative Modification
Permit Fee: \$300.00
Issue Date: 10/10/2013
Effective Date: 10/10/2013

This document constitutes issuance to:

GE Lighting Inc - Bucyrus Lamp Plant
GE Company - Bucyrus Lamp Plant
1250 South Walnut Street
Bucyrus, OH 44820

of a Permit-to-Install for the emissions unit(s) identified on the following page.

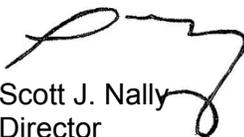
Ohio Environmental Protection Agency (EPA) District Office or local air agency responsible for processing and administering your permit:

Ohio EPA DAPC, Northwest District Office
347 North Dunbridge Road
Bowling Green, OH 43402
(419)352-8461

The above named entity is hereby granted a Permit-to-Install for the emissions unit(s) listed in this section pursuant to Chapter 3745-31 of the Ohio Administrative Code. Issuance of this permit does not constitute expressed or implied approval or agreement that, if constructed or modified in accordance with the plans included in the application, the emissions unit(s) of environmental pollutants will operate in compliance with applicable State and Federal laws and regulations, and does not constitute expressed or implied assurance that if constructed or modified in accordance with those plans and specifications, the above described emissions unit(s) of pollutants will be granted the necessary permits to operate (air) or NPDES permits as applicable.

This permit is granted subject to the conditions attached hereto.

Ohio Environmental Protection Agency


Scott J. Nally
Director



Authorization (continued)

Permit Number: P0114046
Permit Description: Administrative modification to amend emission factors for each of the three existing HSH assembly groups, change monitoring frequency for several emissions units and establish an annual plant-wide natural gas usage restriction to limit emissions of Greenhouse Gases below major source levels.

Permits for the following Emissions Unit(s) or groups of Emissions Units are in this document as indicated below:

Emissions Unit ID:	P007
Company Equipment ID:	L-5
Superseded Permit Number:	P0107607
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P008
Company Equipment ID:	L-6
Superseded Permit Number:	P0107607
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P035
Company Equipment ID:	L-7
Superseded Permit Number:	P0105519
General Permit Category and Type:	Not Applicable



Final Permit-to-Install
GE Lighting Inc - Bucyrus Lamp Plant
Permit Number: P0114046
Facility ID: 0317010010
Effective Date: 10/10/2013

A. Standard Terms and Conditions



1. Federally Enforceable Standard Terms and Conditions

- a) All Standard Terms and Conditions are federally enforceable, with the exception of those listed below which are enforceable under State law only:
 - (1) Standard Term and Condition A.2.a), Severability Clause
 - (2) Standard Term and Condition A.3.c) through A. 3.e) General Requirements
 - (3) Standard Term and Condition A.6.c) and A. 6.d), Compliance Requirements
 - (4) Standard Term and Condition A.9., Reporting Requirements
 - (5) Standard Term and Condition A.10., Applicability
 - (6) Standard Term and Condition A.11.b) through A.11.e), Construction of New Source(s) and Authorization to Install
 - (7) Standard Term and Condition A.14., Public Disclosure
 - (8) Standard Term and Condition A.15., Additional Reporting Requirements When There Are No Deviations of Federally Enforceable Emission Limitations, Operational Restrictions, or Control Device Operating Parameter Limitations
 - (9) Standard Term and Condition A.16., Fees
 - (10) Standard Term and Condition A.17., Permit Transfers

2. Severability Clause

- a) A determination that any term or condition of this permit is invalid shall not invalidate the force or effect of any other term or condition thereof, except to the extent that any other term or condition depends in whole or in part for its operation or implementation upon the term or condition declared invalid.
- b) All terms and conditions designated in parts B and C of this permit are federally enforceable as a practical matter, if they are required under the Act, or any of its applicable requirements, including relevant provisions designed to limit the potential to emit of a source, are enforceable by the Administrator of the U.S. EPA and the State and by citizens (to the extent allowed by section 304 of the Act) under the Act. Terms and conditions in parts B and C of this permit shall not be federally enforceable and shall be enforceable under State law only, only if specifically identified in this permit as such.

3. General Requirements

- a) The permittee must comply with all terms and conditions of this permit. Any noncompliance with the federally enforceable terms and conditions of this permit constitutes a violation of the Act, and is grounds for enforcement action or for permit revocation, revocation and re-issuance, or modification.



- b) It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the federally enforceable terms and conditions of this permit.
- c) This permit may be modified, revoked, or revoked and reissued, for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or revocation, or of a notification of planned changes or anticipated noncompliance does not stay any term and condition of this permit.
- d) This permit does not convey any property rights of any sort, or any exclusive privilege.
- e) The permittee shall furnish to the Director of the Ohio EPA, or an authorized representative of the Director, upon receipt of a written request and within a reasonable time, any information that may be requested to determine whether cause exists for modifying or revoking this permit or to determine compliance with this permit. Upon request, the permittee shall also furnish to the Director or an authorized representative of the Director, copies of records required to be kept by this permit. For information claimed to be confidential in the submittal to the Director, if the Administrator of the U.S. EPA requests such information, the permittee may furnish such records directly to the Administrator along with a claim of confidentiality.

4. Monitoring and Related Record Keeping and Reporting Requirements

- a) Except as may otherwise be provided in the terms and conditions for a specific emissions unit, the permittee shall maintain records that include the following, where applicable, for any required monitoring under this permit:
 - (1) The date, place (as defined in the permit), and time of sampling or measurements.
 - (2) The date(s) analyses were performed.
 - (3) The company or entity that performed the analyses.
 - (4) The analytical techniques or methods used.
 - (5) The results of such analyses.
 - (6) The operating conditions existing at the time of sampling or measurement.
- b) Each record of any monitoring data, testing data, and support information required pursuant to this permit shall be retained for a period of five years from the date the record was created. Support information shall include, but not be limited to all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. Such records may be maintained in computerized form.
- c) Except as may otherwise be provided in the terms and conditions for a specific emissions unit, the permittee shall submit required reports in the following manner:
 - (1) Reports of any required monitoring and/or recordkeeping of federally enforceable information shall be submitted to the Ohio EPA DAPC, Northwest District Office.



- (2) Quarterly written reports of (i) any deviations from federally enforceable emission limitations, operational restrictions, and control device operating parameter limitations, excluding deviations resulting from malfunctions reported in accordance with OAC rule 3745-15-06, that have been detected by the testing, monitoring and recordkeeping requirements specified in this permit, (ii) the probable cause of such deviations, and (iii) any corrective actions or preventive measures taken, shall be made to the Ohio EPA DAPC, Northwest District Office. The written reports shall be submitted (i.e., postmarked) quarterly, by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. See A.15. below if no deviations occurred during the quarter.
- (3) Written reports, which identify any deviations from the federally enforceable monitoring, recordkeeping, and reporting requirements contained in this permit shall be submitted (i.e., postmarked) to the Ohio EPA DAPC, Northwest District Office every six months, by January 31 and July 31 of each year for the previous six calendar months. If no deviations occurred during a six-month period, the permittee shall submit a semi-annual report, which states that no deviations occurred during that period.
- (4) This permit is for an emissions unit located at a Title V facility. Each written report shall be signed by a responsible official certifying that, based on information and belief formed after reasonable inquiry, the statements and information in the report are true, accurate, and complete.

d) The permittee shall report actual emissions pursuant to OAC Chapter 3745-78 for the purpose of collecting Air Pollution Control Fees.

5. Scheduled Maintenance/Malfunction Reporting

Any scheduled maintenance of air pollution control equipment shall be performed in accordance with paragraph (A) of OAC rule 3745-15-06. The malfunction, i.e., upset, of any emissions units or any associated air pollution control system(s) shall be reported to the Ohio EPA DAPC, Northwest District Office in accordance with paragraph (B) of OAC rule 3745-15-06. (The definition of an upset condition shall be the same as that used in OAC rule 3745-15-06(B)(1) for a malfunction.) The verbal and written reports shall be submitted pursuant to OAC rule 3745-15-06.

Except as provided in that rule, any scheduled maintenance or malfunction necessitating the shutdown or bypassing of any air pollution control system(s) shall be accompanied by the shutdown of the emission unit(s) that is (are) served by such control system(s).

6. Compliance Requirements

- a) The emissions unit(s) identified in this Permit shall remain in full compliance with all applicable State laws and regulations and the terms and conditions of this permit.
- b) Any document (including reports) required to be submitted and required by a federally applicable requirement in this permit shall include a certification by a responsible official that, based on information and belief formed after reasonable inquiry, the statements in the document are true, accurate, and complete.



- c) Upon presentation of credentials and other documents as may be required by law, the permittee shall allow the Director of the Ohio EPA or an authorized representative of the Director to:
 - (1) At reasonable times, enter upon the permittee's premises where a source is located or the emissions-related activity is conducted, or where records must be kept under the conditions of this permit.
 - (2) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit, subject to the protection from disclosure to the public of confidential information consistent with ORC section 3704.08.
 - (3) Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit.
 - (4) As authorized by the Act, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit and applicable requirements.
- d) The permittee shall submit progress reports to the Ohio EPA DAPC, Northwest District Office concerning any schedule of compliance for meeting an applicable requirement. Progress reports shall be submitted semiannually or more frequently if specified in the applicable requirement or by the Director of the Ohio EPA. Progress reports shall contain the following:
 - (1) Dates for achieving the activities, milestones, or compliance required in any schedule of compliance, and dates when such activities, milestones, or compliance were achieved.
 - (2) An explanation of why any dates in any schedule of compliance were not or will not be met, and any preventive or corrective measures adopted.

7. Best Available Technology

As specified in OAC Rule 3745-31-05, new sources that must employ Best Available Technology (BAT) shall comply with the Applicable Emission Limitations/Control Measures identified as BAT for each subject emissions unit.

8. Air Pollution Nuisance

The air contaminants emitted by the emissions units covered by this permit shall not cause a public nuisance, in violation of OAC rule 3745-15-07.

9. Reporting Requirements

The permittee shall submit required reports in the following manner:

- a) Reports of any required monitoring and/or recordkeeping of state-only enforceable information shall be submitted to the Ohio EPA DAPC, Northwest District Office.
- b) Except as otherwise may be provided in the terms and conditions for a specific emissions unit, quarterly written reports of (a) any deviations (excursions) from state-only required emission limitations, operational restrictions, and control device operating parameter limitations that have



been detected by the testing, monitoring, and recordkeeping requirements specified in this permit, (b) the probable cause of such deviations, and (c) any corrective actions or preventive measures which have been or will be taken, shall be submitted to the Ohio EPA DAPC, Northwest District Office. If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter. The reports shall be submitted (i.e., postmarked) quarterly, by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. (These quarterly reports shall exclude deviations resulting from malfunctions reported in accordance with OAC rule 3745-15-06.)

10. Applicability

This Permit-to-Install is applicable only to the emissions unit(s) identified in the Permit-to-Install. Separate application must be made to the Director for the installation or modification of any other emissions unit(s).

11. Construction of New Sources(s) and Authorization to Install

- a) This permit does not constitute an assurance that the proposed source will operate in compliance with all Ohio laws and regulations. This permit does not constitute expressed or implied assurance that the proposed facility has been constructed in accordance with the application and terms and conditions of this permit. The action of beginning and/or completing construction prior to obtaining the Director's approval constitutes a violation of OAC rule 3745-31-02. Furthermore, issuance of this permit does not constitute an assurance that the proposed source will operate in compliance with all Ohio laws and regulations. Issuance of this permit is not to be construed as a waiver of any rights that the Ohio Environmental Protection Agency (or other persons) may have against the applicant for starting construction prior to the effective date of the permit. Additional facilities shall be installed upon orders of the Ohio Environmental Protection Agency if the proposed facilities cannot meet the requirements of this permit or cannot meet applicable standards.
- b) If applicable, authorization to install any new emissions unit included in this permit shall terminate within eighteen months of the effective date of the permit if the owner or operator has not undertaken a continuing program of installation or has not entered into a binding contractual obligation to undertake and complete within a reasonable time a continuing program of installation. This deadline may be extended by up to 12 months if application is made to the Director within a reasonable time before the termination date and the party shows good cause for any such extension.
- c) The permittee may notify Ohio EPA of any emissions unit that is permanently shut down (i.e., the emissions unit has been physically removed from service or has been altered in such a way that it can no longer operate without a subsequent "modification" or "installation" as defined in OAC Chapter 3745-31) by submitting a certification from the authorized official that identifies the date on which the emissions unit was permanently shut down. Authorization to operate the affected emissions unit shall cease upon the date certified by the authorized official that the emissions unit was permanently shut down. At a minimum, notification of permanent shut down shall be made or confirmed by marking the affected emissions unit(s) as "permanently shut down" in Ohio EPA's "Air Services" along with the date the emissions unit(s) was permanently removed and/or disabled. Submitting the facility profile update will constitute notifying of the permanent shutdown of the affected emissions unit(s).



- d) The provisions of this permit shall cease to be enforceable for each affected emissions unit after the date on which an emissions unit is permanently shut down (i.e., emissions unit has been physically removed from service or has been altered in such a way that it can no longer operate without a subsequent "modification" or "installation" as defined in OAC Chapter 3745-31). All records relating to any permanently shutdown emissions unit, generated while the emissions unit was in operation, must be maintained in accordance with law. All reports required by this permit must be submitted for any period an affected emissions unit operated prior to permanent shut down. At a minimum, the permit requirements must be evaluated as part of the reporting requirements identified in this permit covering the last period the emissions unit operated.

No emissions unit certified by the authorized official as being permanently shut down may resume operation without first applying for and obtaining a permit pursuant to OAC Chapter 3745-31.

- e) The permittee shall comply with any residual requirements related to this permit, such as the requirement to submit a deviation report, air fee emission report, or other any reporting required by this permit for the period the operating provisions of this permit were enforceable, or as required by regulation or law. All reports shall be submitted in a form and manner prescribed by the Director. All records relating to this permit must be maintained in accordance with law.

12. Permit-To-Operate Application

The permittee is required to apply for a Title V permit pursuant to OAC Chapter 3745-77. The permittee shall submit a complete Title V permit application or a complete Title V permit modification application within twelve (12) months after commencing operation of the emissions units covered by this permit. However, if the proposed new or modified source(s) would be prohibited by the terms and conditions of an existing Title V permit, a Title V permit modification must be obtained before the operation of such new or modified source(s) pursuant to OAC rule 3745-77-04(D) and OAC rule 3745-77-08(C)(3)(d).

13. Construction Compliance Certification

The applicant shall identify the following dates in the online facility profile for each new emissions unit identified in this permit.

- a) Completion of initial installation date shall be entered upon completion of construction and prior to start-up.
- b) Commence operation after installation or latest modification date shall be entered within 90 days after commencing operation of the applicable emissions unit.

14. Public Disclosure

The facility is hereby notified that this permit, and all agency records concerning the operation of this permitted source, are subject to public disclosure in accordance with OAC rule 3745-49-03.



15. Additional Reporting Requirements When There Are No Deviations of Federally Enforceable Emission Limitations, Operational Restrictions, or Control Device Operating Parameter Limitations

If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter. The reports shall be submitted quarterly (i.e., postmarked), by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters.

16. Fees

The permittee shall pay fees to the Director of the Ohio EPA in accordance with ORC section 3745.11 and OAC Chapter 3745-78. The permittee shall pay all applicable permit-to-install fees within 30 days after the issuance of any permit-to-install. The permittee shall pay all applicable permit-to-operate fees within thirty days of the issuance of the invoice.

17. Permit Transfers

Any transferee of this permit shall assume the responsibilities of the prior permit holder. The new owner must update and submit the ownership information via the "Owner/Contact Change" functionality in Air Services once the transfer is legally completed. The change must be submitted through Air Services within thirty days of the ownership transfer date.

18. Risk Management Plans

If the permittee is required to develop and register a risk management plan pursuant to section 112(r) of the Clean Air Act, as amended, 42 U.S.C. 7401 et seq. ("Act"), the permittee shall comply with the requirement to register such a plan.

19. Title IV Provisions

If the permittee is subject to the requirements of 40 CFR Part 72 concerning acid rain, the permittee shall ensure that any affected emissions unit complies with those requirements. Emissions exceeding any allowances that are lawfully held under Title IV of the Act, or any regulations adopted thereunder, are prohibited.



Final Permit-to-Install
GE Lighting Inc - Bucyrus Lamp Plant
Permit Number: P0114046
Facility ID: 0317010010
Effective Date: 10/10/2013

B. Facility-Wide Terms and Conditions



1. All the following facility-wide terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only:
 - a) None.

2. Under the authority of OAC rule 3745-31-05(D), this permit establishes the following facility-wide terms and conditions for purposes of establishing federally enforceable requirements to limit the potential to emit (PTE) of greenhouse gases (GHGs) from the facility. The federally enforceable requirements are being established for purposes of limiting the PTE of carbon dioxide equivalent (CO₂e) emissions from the facility only associated with “general stationary fuel combustion sources” involving the use of combustible fuels. A federally enforceable requirement limiting the use of natural gas at the facility will limit emissions of CO₂e from combustion sources to 74,000 tons per rolling 12-month period. The PTE of 74,000 tons CO₂e annually from fuel combustion sources along with the potential CO₂e from non-combustion sources at the facility will result in a PTE below 100,000 tons per year of CO₂e. The PTE of less than 100,000 tons CO₂e annually will result in GHGs from the facility not becoming “subject to regulation” as defined in 40 CFR 51.166(b)(48)(i) and as a result no determination regarding major source status of the facility for GHGs on a mass basis will be required.
 - a) This permit establishes an operational restriction which limits the quantity of natural gas combusted at the entire facility as a means to limit total PTE for CO₂e from all fuels combined. The maximum rolling 12-month quantity of natural gas used shall not exceed 1,200 million standard cubic feet (MMCF) per rolling 12-month period. This emissions unit has been in operation for more than 12 months and, as such, the permittee has existing records to generate the rolling, 12-month summation of the natural gas usage, upon issuance of this permit.
 - b) The permittee shall collect and record the following information each month for natural gas usage at the entire facility:
 - (1) The amount of natural gas usage, in MMCF, for the entire facility. This one value will include all operations, processes, emission units, etc. which combust natural gas;
 - (2) The rolling 12-month facility-wide usage of natural gas, in MMCF;
 - (3) The facility-wide CO₂e emissions from natural gas combustion, in tons (short tons), quantified in accordance with the calculation methodologies outlined in 40 CFR Part 98.33. (It should be noted that 40 CFR Part 98.33 quantifies GHG emissions in metric tons and emissions must be converted to short tons for purposes of this monitoring and recordkeeping requirement due to PSD applicability involving short ton thresholds); and
 - (4) The rolling 12-month facility-wide CO₂e emissions from natural gas combustion, in tons.
 - c) The permittee shall submit quarterly deviation reports that identify:
 - (1) all deviations of the following emission limitations, operational restrictions and/or control device operating parameter limitations that restrict the potential to emit of any regulated air pollutant and have been detected by the monitoring, recordkeeping, and/or testing requirements in this permit:
 - a. all exceedances of the rolling 12-month natural gas usage restriction of 1,200 MMCF; and



Final Permit-to-Install
GE Lighting Inc - Bucyrus Lamp Plant
Permit Number: P0114046
Facility ID: 0317010010
Effective Date: 10/10/2013

- b. all exceedances of the rolling 12-month facility-wide CO₂e emission limitation of 74,000 tons.

If no deviations (excursions) occurred during a calendar quarter, the permittee shall submit a report that states that no deviations (excursions) occurred during the quarter.

The quarterly reports shall be submitted, electronically through Ohio EPA Air Services, each year by January 31 (covering October to December), April 30 (covering January to March), July 31 (covering April to June), and October 31 (covering July to September), unless an alternative schedule has been established and approved by the Director (the appropriate District Office or local air agency).

- d) Compliance with the emission limitation of 74,000 tons of CO₂e per rolling 12-month period from the entire facility shall be demonstrated by the monitoring and recordkeeping in section B.2.b).



Final Permit-to-Install
GE Lighting Inc - Bucyrus Lamp Plant
Permit Number: P0114046
Facility ID: 0317010010
Effective Date: 10/10/2013

C. Emissions Unit Terms and Conditions



1. P007, L-5

Operations, Property and/or Equipment Description:

L-5 High Speed Horizontal Lamp Assembly Line (Line K)- Coating, End Brushing, Natural Gas Combustion, and Mercury Evacuation with Cyclone and Carbon Adsorber (Modification to increase current permit emission limitations)

- a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.
 - (1) None.
- b) Applicable Emissions Limitations and/or Control Requirements
 - (1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-05(A)(3) (Administrative modification to PTI P0107607, issued 04/19/2011 to update emissions factors)	<p><u>Coating Emissions:</u> 3.2 lbs organic compounds (OC)/hour; 14.02 tons OC/year * See also b)(2)a.</p> <p><u>Cleanup Emissions:</u> 2.82 lbs OC/month; 0.02 ton OC/year</p> <p><u>Natural Gas Combustion Emissions:</u> 3.53 lbs nitrogen oxides (NOx)/hour; 15.44 tons NOx/year</p> <p>2.96 lbs carbon monoxide (CO)/hour; 12.97 tons CO/year</p> <p><u>Binder Combustion Emissions:</u> 0.36 lbNOx/hour; 1.6 ton NOx/year</p> <p><u>End Brushing Emissions:</u> 0.01 lb particulate emissions (PE)/hour; 0.04 ton PE/year</p> <p>Visible PE shall not exceed 5% opacity, as a six-minute average.</p> <p><u>SO2 Lubricant Emissions:</u></p>



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		0.84 lb sulfur dioxide (SO ₂)/hr; 3.68 tons SO ₂ /yr <u>Mercury Evacuation System Emissions:</u> 0.0004 lb of Mercury (Hg)/hour; 0.002 ton of Hg/year See b)(2)a through b)(2)c.
b.	OAC rule 3745-21-09(U)(1)(d)	3.5 pounds of volatile organic compounds (VOC) per gallon of coating, excluding water and exempt solvents [for the coatings used for the metal parts (base cement coatings)]
c.	OAC rule 3745-31-05(D)	Emissions of carbon dioxide equivalents (CO ₂ e) from the entire facility shall not exceed 74,000 tons per rolling 12-month period [see Facility-Wide Terms and Conditions – B.2]
d.	OAC rule 3745-17-11(B)(2)	See b)(2)d
e.	OAC rule 3745-17-07(A)(1)	See b)(2)e
f.	OAC rule 3745-18-06(E)	Exempt [see b)(2)f]

(2) Additional Terms and Conditions

- a. The hourly OC emissions limitation of 3.24 pounds was established for PTI purposes to reflect the potential to emit for this emissions unit. Therefore, it is not necessary to develop record keeping and reporting requirements to ensure compliance with this limitation.
- b. The requirements of this rule also include compliance with the requirements of OAC rule 3745-21-09(U)(1)(d) and OAC rule 3745-31-05(D).
- c. Best available technology (BAT) control requirements have been determined to be the following:
 - i. Use of a baghouse (fabric filter) for particulate emissions from the end brushing operation; the fabric filter shall achieve an overall control efficiency of 99%, by weight.
 - ii. Use of a carbon adsorber for mercury emissions from the mercury evacuation system; the carbon adsorber shall achieve a maximum outlet emission rate of 0.0004 pound of mercury per hour.
- d. The uncontrolled mass rate of particulate emissions from this emissions unit is less than 10 lbs/hr. Therefore, pursuant to OAC rule 3745-17-11(A)(2)(a)(ii), Figure II of OAC rule 3745-17-11 does not apply. In addition, Table I of OAC rule



3745-17-11 does not apply because the facility is located in Crawford County, which is identified as a P-2 county.

- e. This emissions unit is exempt from the visible particulate emission limitations specified in OAC rule 3745-17-07(A), pursuant to OAC rule 3745-17-07(A)(3)(h), because OAC rule 3745-17-11 is not applicable.
 - f. The maximum process weight rate for this emissions unit is less than 1000 lbs/hr. Therefore, pursuant to OAC rule 3745-18-06 (C), this emissions unit is exempt from OAC rule 3745-18-06 (E).
 - g. The hourly and annual emission limitations for NO_x, CO, PE, SO₂ and Hg were established for PTI purposes to reflect the potentials to emit for this emissions unit. Therefore, it is not necessary to develop record keeping and reporting requirements to ensure compliance with these limitations.
 - h. Sections b)(2)a. through b)(2)g. above are intended for clarification of current regulatory applicability and requirements at the time of permit issuance, and are not intended to address or prohibit any change that could otherwise be processed under OAC rule 3745-77-07(I).
- c) Operational Restrictions
- (1) None.
- d) Monitoring and/or Recordkeeping Requirements
- (1) When coating metal parts, the permittee shall collect and record the following information each month and maintain the information at the facility for a period of three years, for this emissions unit for the coatings used for the metal parts:
 - a. the company name and identification of each coating (base cement) employed;
 - b. the VOC content of each coating (pounds/gallon, excluding water and exempt solvents) employed. [The VOC content excluding water and exempt solvents shall be calculated in accordance with the equation specified in paragraph (B)(8) of OAC rule 3745-21-10 for CVOC,2.]
 - (2) The permittee shall collect and record the following information each month for all OC emissions emitted from lamp processing and base bake operations for this emissions unit:
 - a. the name and identification number of each coating, ink and base cement employed;
 - b. the total number of lamps processed;
 - c. the total amount of basefill machine lube used;
 - d. the total OC emissions from the coatings and inks employed, calculated in accordance with the following equation:



OC emissions (lbs/month) = (thousand lamps processed/month) x (A + B + C + D + E + F + G + H)

where:

A = emission factor for phosphor top coat:
maximum gallons of coating/1000 lamps (2.54) x maximum OC content in lb/gal (0.0012) = 0.003 lb of OC/1000 lamps

B = emission factor for phosphor base coat:
maximum gallons of coating/1000 lamps (0.53) x maximum OC content in lb/gal (0.0012) = 0.001 lb of OC/1000 lamps

C = emission factor for monogram ink:
maximum liters of ink/1000 lamps (0.0021) / 3.78 liters/gallon x maximum OC content in lb/gal (8.09) = 0.0045 lb of OC/1000 lamps

D = emission factor for monogram ink diluent solvent:
maximum liters of ink/1000 lamps (0.0002) / 3.78 liters/gallon x maximum OC content in lb/gal (9.34) = 0.00049 lb of OC/1000 lamps

E = emission factor for headmarking ink:
maximum liters of ink/1000 lamps (0.0002) / 3.78 liters/gallon x maximum OC content in lb/gal (5.51) = 0.0003 lb of OC/1000 lamps

F = emission factor for headmarking ink diluent solvent:
maximum liters of solvent/1000 lamps (0.0025) / 3.78 liters/gallon x maximum OC content in lb/gal (6.76) = 0.00452 lb of OC/1000 lamps

G = emission factor for E-Mix:
maximum liters of E-Mix/1000 lamps (0.017) / 3.78 liters/gallon x 16.68 lb E-Mix/gallon x maximum OC content weight fraction (0.4) = 0.03 lb of OC/1000 lamps

H = emission factor for Dry-Film:
maximum grams of Dry-Film/1000 lamps (1.6) / 454g/lb x maximum weight fraction (0.004) = 0.000014 lb of OC/1000 lamps

- e. the total OC emissions from all the base cement employed on this emissions unit, calculated in accordance with the following equation:

OC emissions from base bake operations (lbs/month) = (thousand lamps processed/month) x (EF)

where

EF = emission factor for base cement:

EF (lb OC/1000 lamps) = maximum lbs cement/1000 lamps (2.64) x maximum OC content weight fraction (0.097) x 0.98* = 0.251



* 2% of the OC is emitted elsewhere

- f. the total OC emissions from basefill machine lube operations, calculated in accordance with the following equation:

total OC emissions from basefill machine lube operations (lbs/month) = (gallons basefill machine lube used) x (EF)

where

EF = emissions factor for basefill machine lube (6.71 lbs OC/gallon)

- g. the total OC emissions from lamp processing, base bake operations, and basefill machine lube operations, per month, calculated in accordance with the following equation:

total OC emissions (tons/month) = {the total OC emissions from lamp processing [from d(2)d.] + the total OC emissions from base bake operations [from d(2)e.] + the total OC emissions from basefill machine lube operations [d(2)f]; and

- h. the total OC emissions from lamp processing and base bake operations per year, calculated by summing the monthly OC emissions [from d(2)g.] for the calendar year.

- (3) The permittee shall collect and record the following information each month for all the cleanup materials employed in this emissions unit:

- a. the name and identification of each cleanup material employed;
- b. the OC content of each cleanup material employed, in pounds per gallon;
- c. the number of gallons of each cleanup material employed;
- d. the OC emissions from each cleanup material employed [d(3)b. x d(3)c.];
- e. the total OC emissions per month from all the cleanup materials employed [summation of d(3)d. for all cleanup materials], in pounds; and
- f. the total OC emissions per calendar year from all cleanup materials employed, calculated by summing the monthly OC emissions from d(3)e. and dividing by 2000 lbs/ton.

- (4) The permittee shall monitor at least once every fifteen minutes the pressure drop across the carbon adsorber serving the vacuum pump, and across the baghouse (fabric filter) serving the end brushing operation, during operation of this emissions unit, and record the average of those values over the period during which this emissions unit operates each day. For purposes of this requirement, the permittee shall record one average total pressure drop value for each control device each day, for a period beginning at midnight or such time after midnight when the emissions unit begins to operate and ending at the time the emissions unit ceases that day or at midnight should the emissions unit operate



beyond midnight. If the emissions unit starts and stops more than once during this 24-hour period, the permittee shall record the average value for the time during this 24-hour period when the emissions unit is in operation. Hereinafter this value shall be called a "Daily Pressure Drop Value".

Whenever the Daily Pressure Drop Value is outside of the applicable range specified below (hereinafter the "Pressure Drop Range"), the permittee shall promptly conduct an investigation to determine if there is a malfunction of the carbon adsorber or either baghouse (whichever is producing a Daily Pressure Drop Value outside of its Pressure Drop Range), and if so, comply with the requirements of OAC rule 3745-15-06. For each such occasion (i.e. when a Daily Pressure Drop Value is outside of its Pressure Drop Range), the permittee shall record the number of days during which the Daily Pressure Drop Value remained outside of its Pressure Drop Range and a description of the maintenance or repairs, if any, made to the carbon adsorber or baghouse. If upon the investigation the permittee determines there is no malfunction that is subject to OAC rule 3745-15-06, the permittee shall also maintain records documenting the basis for such determination.

The Pressure Drop Ranges are:

- a. for the carbon adsorber, 0.01 to 5.0 inches of water.
- b. for the baghouse, 0.5 to 5.0 inches of water.

These Pressure Drop Ranges are effective for the duration of this permit, unless revisions are requested by the permittee and approved in writing by the Ohio EPA, Northwest District Office. The permittee may request revisions to the range(s) based upon information that demonstrates compliance with the allowable mercury emission rate (for the carbon adsorber) or particulate emission rate (for the baghouse) for this emissions unit. If the permittee submits a written request to establish a new Pressure Drop Range, Ohio EPA shall promptly evaluate and act on that request and, if approved, incorporate the new range into this permit as a minor permit modification.

e) Reporting Requirements

- (1) The permittee shall notify the Northwest District Office in writing of any monthly record showing the use of base cement exceeding 3.5 pounds of volatile organic compounds (VOC) per gallon of coating, excluding water and exempt solvents. The notification shall include a copy of such record and shall be sent to the Northwest District Office within 30 days following the end of the calendar month.
- (2) The permittee shall submit semiannual reports that identify the following information concerning the operation of the carbon adsorber during operation of this emissions unit:
 - a. the total duration (in days) that its Daily Pressure Drop Value was outside of its applicable Pressure Drop Range; and
 - b. any and all omissions of the monitoring, record keeping, investigation, and malfunction reporting requirements specified in d)(4).



These semiannual reports shall be submitted by January 31 for the six-month period ending December 31 and by July 31 for the six-month period ending June 30.

- (3) The permittee shall submit semiannual reports that identify the following information concerning the operation of the baghouse (fabric filter) during operation of this emissions unit:
 - a. the total duration (in days) that its Daily Pressure Drop Value was outside of its applicable Pressure Drop Range; and
 - b. any and all omissions of the monitoring, record keeping, investigation, and malfunction reporting requirements specified in d)(4).

These semiannual reports shall be submitted by January 31 for the six-month period ending December 31 and by July 31 for the six-month period ending June 30.

- (4) The permittee shall submit quarterly deviation (excursion) reports that identify all exceedances of the following limitations:
 - a. the monthly OC emission limitation of 2.82 pounds (from cleanup materials).

The permittee shall submit these reports in accordance with the Standard Terms and Conditions of this permit.

- (5) The permittee shall submit annual reports that summarize the actual annual OC emissions from lamp processing and base bake operations for this emissions unit for the previous calendar year. These reports shall be submitted by January 31 of each year.
- (6) The permittee shall submit annual reports that summarize the actual annual OC emissions from cleanup for this emissions unit for the previous calendar year. These reports shall be submitted by January 31 of each year.
- (7) The permittee shall submit quarterly summaries that include a log of the downtime for the capture (collection) system, control device and monitoring equipment when the associated emissions unit was in operation.

f) Testing Requirements

- (1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitation:

3.2 lbs OC/hour

Applicable Compliance Method:

The hourly allowable OC emission rate was established based on the summation of the OC emissions generated during lamp manufacturing and OC emissions generated during lamp base bake operations. Emissions of OC resulting from



combustion and clean up at this source are excluded from this limit. The following outlines potential emissions generated during each process:

- i. Lamp manufacturing - the potential to emit for lamp manufacturing is 0.35 lbs of OC per hour based on the summation of emissions from the following components of the line and a maximum lamp manufacturing rate of 8000 lamps per hour:

Phosphor Top Coating - 0.024 pounds of OC per hour (based on a maximum coating usage rate of 2.54 gal/1000 lamps and a maximum OC content of 0.0012 lb VOC/gal).

Phosphor Base Coating - 0.005 pounds of OC per hour (based on a maximum coating usage rate of 0.53 gal/1000 lamps and a maximum OC content of 0.0012 lb VOC/gal).

Monogram Ink - 0.04 pound of OC per hour (based on a maximum ink usage rate of 0.0021 liters/1000 lamps and a maximum OC content of 8.09 lb/gallon, plus a maximum diluent usage rate of 0.002 liters/1000 lamps and a maximum OC content of 9.34 lb/gallon).

Headmarking Ink - 0.039 pound of OC per hour (based on a maximum ink usage rate of 0.0002 liters/1000 lamps and a maximum OC content of 5.51 lb/gallon, plus a maximum diluent solvent usage rate of 0.0025 lb/1000 lamps and maximum OC content 6.76 lb/gallon).

E-Mix - 0.24 pound of OC per hour (based on a maximum usage rate of 0.017 liters/1000 lamps and a maximum OC content of 40% by weight).

Dry Film - 0.00011 pound of OC per hour (based on a maximum usage rate of 1.6 grams/1000 lamps and a maximum OC content of 0.4% by weight).

- ii. Lamp base bake operations - the potential to emit for lamp base bake operations is 2.01 lbs of OC per hour based on a maximum lamp base baking rate of 8000 lamps per hour and a maximum cement usage rate of 2.64 lbs/1000 lamps, a maximum OC content of 9.7 % by weight and a maximum emission rate of 98% (98% for this emissions unit, i.e. 2% of the OC is emitted during base cement mixing).
- iii. Basefill machine lube operations – the potential to emit for basefill machine lube operations is 0.84 lbs OC/hour based on a maximum basefill machine lube usage rate of 0.125 gallons/hour and an emissions factor of 6.71 lbs OC/gallon.

If required, the permittee shall demonstrate compliance in accordance with Methods 1 - 4, 18, 25, or 25A, as appropriate, of 40 CFR, Part 60, Appendix A.



b. Emission Limitation:

14.02 tons OC/year

Applicable Compliance Method:

Compliance with the OC emission limitation above shall be demonstrated based on the monitoring and record keeping requirements established in d)(2). Emissions of OC resulting from combustion and clean up at this source are excluded from this limit.

c. Emission Limitation:

2.82 lbs OC/month, from cleanup materials

Applicable Compliance Method:

Compliance with the OC emission limitation above shall be demonstrated based on the monitoring and record keeping requirements established in d)(3).

d. Emission Limitation:

0.02 ton OC/year, from cleanup materials

Applicable Compliance Method:

Compliance with the OC emission limitation above shall be demonstrated based on the monitoring and record keeping requirements established in d)(3) and shall be the summation of the 12 OC emission rates for the calendar year.

e. Emission Limitation:

3.53 lbsNO_x/hour (natural gas combustion)

Applicable Compliance Method:

The hourly allowable NO_x emission limitation was established by multiplying the maximum natural gas usage rate of 35,257 cu. ft /hr by the AP-42 emission factor of 100 lbs of NO_x/mm cu. ft (AP-42, Section 1.4, Table 1.4-1 [revised 7/98]).

If required, the permittee shall demonstrate compliance in accordance with Methods 1- 4 and 7 of 40 CFR, Part 60, Appendix A.

f. Emission Limitation:

2.96 lb CO/hour (natural gas combustion)



Applicable Compliance Method:

The hourly allowable CO emission limitation was established by multiplying the maximum natural gas usage rate of 35,257 cu. ft /hr by the AP-42 emission factor of 84 lbs of CO/mm cu. ft (AP-42, Section 1.4, Table 1.4-1 [revised 7/98]).

If required, the permittee shall demonstrate compliance in accordance with Methods 1- 4 and 10 of 40 CFR, Part 60, Appendix A.

g. Emission Limitation:

0.01 lb PE/hour (end brushing)

Applicable Compliance Method:

The hourly allowable PE limitation was established by multiplying the maximum phosphor coating application rate of 12.56 lbs/1000 lamps by the production rate of 8000 lamps per hour, a removal rate of 1% of the phosphor applied, and then multiplying by a control factor (1-0.99*).

If required, the permittee shall demonstrate compliance in accordance with Methods 1- 5 of 40 CFR, Part 60, Appendix A.

* thebaghouse control efficiency is assumed to be $\geq 99\%$.

h. Emission Limitation:

Visible PE shall not exceed 5% opacity, as a six-minute average (end brushing)

Applicable Compliance Method:

If required, compliance shall be determined in accordance with the test method and procedures in Method 9 of 40 CFR, Part 60, Appendix A.

i. Emission Limitation:

0.84 lb SO₂/hour (SO₂ lubricant)

Applicable Compliance Method:

The hourly allowable SO₂ emission limitation was established by summing the maximum of 0.11 lb of SO₂/hour injected in the Lehr and 0.73 lb of SO₂/hour injected in the flare machines.

If required, the permittee shall demonstrate compliance in accordance with Methods 1 - 4 and 6 of 40 CFR, Part 60, Appendix A.



j. Emission Limitation:

0.36 lbNO_x/hour (binder combustion)

Applicable Compliance Method:

The hourly allowable NO_x emission limitation was established by multiplying the maximum phosphor coating application rate of 0.53 gal/1000 lamps by the maximum lamp processing rate of 8000 lamps per hour and by 0.084 lb of NO_x/gal of binder. This assumes all ammonia in the coating is converted to NO_x.

If required, the permittee shall demonstrate compliance in accordance with the test methods and procedures in Methods 1- 4 and 7 of 40 CFR, Part 60, Appendix A.

k. Emission Limitation:

0.0004 lb Hg/hour

Applicable Compliance Method:

Compliance with this emission limitation was demonstrated with the results of emissions testing conducted on November 18, 2003.

If required, the permittee shall conduct any future compliance demonstration with the emission limitation in accordance with Methods 1 through 4 and 29 of 40 CFR, Part 60, Appendix A.

l. Emission Limitation:

15.44 tons NO_x/year (natural gas combustion)

12.97 tons CO/year (natural gas combustion)

0.04 ton PE/year (end brushing)

3.75 tons SO₂/year (SO₂ lubricant)

1.6 ton NO_x/year (binder combustion)

0.002 ton Hg/year

Applicable Compliance Method:

The annual emission limitation for each pollutant was determined by multiplying the hourly emission limitation for the specific pollutant by 8760, and then dividing by 2000. Therefore, provided compliance is shown with the hourly emissions limitation, compliance with the annual emissions limitation shall also be demonstrated.



- (2) Formulation data or U.S. EPA Method 24 shall be used to determine the OC/VOC contents of all the coatings and cleanup materials.

- g) Miscellaneous Requirements
 - (1) None.



2. P008, L-6

Operations, Property and/or Equipment Description:

L-6 High Speed Horizontal Lamp Assembly Line (Line L) - Coating, End Brushing, Natural Gas Combustion, and Mercury Evacuation with Cyclone and Carbon Adsorber (Modification to increase current permit emission limitations)

- a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.
 - (1) None.
- b) Applicable Emissions Limitations and/or Control Requirements
 - (1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-05(A)(3) (Administrative modification to PTI P0107607, issued 04/19/2011, to update emissions factors)	<p><u>Coating Emissions:</u> 4.41 lbs organic compounds (OC)/hour*; 19.32 tons OC/year * see also b)(2)a</p> <p><u>Cleanup Emissions:</u> 2.82 lbs OC/month; 0.02 ton OC/year</p> <p><u>Natural Gas Combustion Emissions:</u> 3.53 lbs nitrogen oxides (NOx)/hour; 15.44 tons NOx/year</p> <p>2.96 lbs carbon monoxide (CO)/hour; 12.97 tons CO/year</p> <p><u>Binder Combustion Emissions:</u> 0.36 lbNOx/hour; 1.6 ton NOx/year</p> <p><u>End Brushing Emissions:</u> 0.01 lb particulate emissions (PE)/hour; 0.04 ton PE/year</p> <p>Visible PE shall not exceed 5% opacity, as a six-minute average.</p> <p><u>SO2 Lubricant Emissions:</u></p>



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		0.84 lb sulfur dioxide (SO ₂)/hr; 3.68 tons SO ₂ /yr <u>Mercury Evacuation System Emissions:</u> 0.0004 lb of Mercury (Hg)/hour; 0.002 ton of Hg/year See b)(2)a through b)(2)c.
b.	OAC rule 3745-21-09(U)(1)(d)	3.5 pounds of volatile organic compounds (VOC) per gallon of coating, excluding water and exempt solvents [for the coatings used for the metal parts (base cement coatings)]
c.	OAC rule 3745-31-05(D)	Emissions of carbon dioxide equivalents (CO ₂ e) from the entire facility shall not exceed 74,000 tons per rolling 12-month period [see Facility-Wide Terms and Conditions – B.2]
d.	OAC rule 3745-17-11(B)(2)	See b)(2)d
e.	OAC rule 3745-17-07(A)(1)	See b)(2)e
f.	OAC rule 3745-18-06(E)	Exempt [see b)(2)f]

(2) Additional Terms and Conditions

- a. The hourly OC emission limitation of 4.41 pounds was established for PTI purposes to reflect the potential to emit for this emissions unit. Therefore, it is not necessary to develop record keeping and reporting requirements to ensure compliance with this limitation.
- b. The requirements of this rule also include compliance with the requirements of OAC rule 3745-21-09(U)(1)(d) and OAC rule 3745-31-05(D) .
- c. Best available technology (BAT) control requirements have been determined to be the following:
 - i. Use of a cyclone (or fabric filter) for particulate emissions from the end brushing operation; the cyclone (or fabric filter) shall achieve an overall control efficiency of 80%, by weight.
 - ii. Use of a carbon adsorber for mercury emissions from the mercury evacuation system; the carbon adsorber shall achieve a maximum outlet emission rate of 0.0004 pound of mercury per hour.
- d. The uncontrolled mass rate of particulate emissions from this emissions unit is less than 10 lbs/hr. Therefore, pursuant to OAC rule 3745-17-11(A)(2)(a)(ii), Figure II of OAC rule 3745-17-11 does not apply. In addition, Table I of OAC rule



3745-17-11 does not apply because the facility is located in Crawford County, which is identified as a P-2 county.

- e. This emissions unit is exempt from the visible particulate emission limitations specified in OAC rule 3745-17-07(A), pursuant to OAC rule 3745-17-07(A)(3)(h), because OAC rule 3745-17-11 is not applicable.
- f. The maximum process weight rate for this emissions unit is less than 1000 lbs/hr. Therefore, pursuant to OAC rule 3745-18-06 (C), this emissions unit is exempt from OAC rule 3745-18-06 (E).
- g. The hourly and annual emission limitations for NO_x, CO, PE, SO₂ and Hg were established for PTI purposes to reflect the potentials to emit for this emissions unit. Therefore, it is not necessary to develop record keeping and reporting requirements to ensure compliance with these limitations.
- h. Sections b)(2)a through b)(2)g above are intended for clarification of current regulatory applicability and requirements at the time of permit issuance, and are not intended to address or prohibit any change that could otherwise be processed under OAC rule 3745-77-07(I).

c) Operational Restrictions

- (1) None.

d) Monitoring and/or Recordkeeping Requirements

- (1) When coating metal parts, the permittee shall collect and record the following information each month and maintain the information at the facility for a period of three years, for this emissions unit for the coatings used for the metal parts:
 - a. the company name and identification of each coating (base cement) employed;
 - b. the VOC content of each coating (pounds/gallon, excluding water and exempt solvents) employed. [The VOC content excluding water and exempt solvents shall be calculated in accordance with the equation specified in paragraph (B)(8) of OAC rule 3745-21-10 for CVOC,2.]
- (2) The permittee shall collect and record the following information each month for all OC emissions emitted from lamp processing and base bake operations for this emissions unit:
 - a. the name and identification number of each coating, ink and base cement employed;
 - b. the total number of lamps processed;
 - c. the total amount of basefill machine lube used;
 - d. the total OC emissions from the coatings and inks employed, calculated in accordance with the following equation:



OC emissions (lbs/month) = (thousand lamps processed/month) x (A + B + C + D + E + F + G + H)

where:

A = emission factor for phosphor top coat:
maximum gallons of coating/1000 lamps (2.54) x maximum OC content in lb/gal (0.0012) = 0.003 lb of OC/1000 lamps

B = emission factor for phosphor base coat:
maximum gallons of coating/1000 lamps (0.53) x maximum OC content in lb/gal (0.0012) = 0.001 lb of OC/1000 lamps

C = emission factor for monogram ink:
maximum liters of ink/1000 lamps (0.0021) / 3.78 liters/gallon x maximum OC content in lb/gal (8.09) = 0.0045 lb of OC/1000 lamps

D = emission factor for monogram ink diluent solvent:
maximum liters of ink/1000 lamps (0.0002) / 3.78 liters/gallon x maximum OC content in lb/gal (9.34) = 0.00049 lb of OC/1000 lamps

E = emission factor for headmarking ink:
maximum liters of ink/1000 lamps (0.0002) / 3.78 liters/gallon x maximum OC content in lb/gal (5.51) = 0.0003 lb of OC/1000 lamps

F = emission factor for headmarking ink diluent solvent:
maximum liters of solvent/1000 lamps (0.0025) / 3.78 liters/gallon x maximum OC content in lb/gal (6.76) = 0.00452 lb of OC/1000 lamps

G = emission factor for E-Mix:
maximum liters of E-Mix/1000 lamps (0.017) / 3.78 liters/gallon x 16.68 lb E-Mix/gallon x maximum OC content weight fraction (0.4) = 0.03 lb of OC/1000 lamps

H = emission factor for Dry-Film:
maximum grams of Dry-Film/1000 lamps (1.6) / 454g/lb x maximum weight fraction (0.004) = 0.000014 lb of OC/1000 lamps

- e. the total OC emissions from all the base cement employed on this emissions unit, calculated in accordance with the following equation:

OC emissions from base bake operations (lbs/month) = (thousand lamps processed/month) x (EF)

where

EF = emission factor for base cement:

EF (lb OC/1000 bases) = maximum lbs cement/1000 lamps (4.41) x maximum OC content weight fraction (0.093) x 0.98* = 0.402



* 2% of the OC is emitted elsewhere

- f. the total OC emissions from basefill machine lube operations, calculated in accordance with the following equation:

total OC emissions from basefill machine lube operations (lbs/month) = (gallons basefill machine lube used) x (EF)

where

EF = emissions factor for basefill machine lube (6.71 lbs OC/gallon)

- g. the total OC emissions from lamp processing, base bake operations, and basefill machine lube operations per month, calculated in accordance with the following equation:

total OC emissions (tons/month) = {the total OC emissions from lamp processing [from d(2)d.] + the total OC emissions from base bake operations [from d(2)e.] + the total OC emissions from basefill machine lube operations [from d(2)f]; and

- h. the total OC emissions from lamp processing and base bake operations per year, calculated by summing the monthly OC emissions [from d(2)g.] for the calendar year.

- (3) The permittee shall collect and record the following information each month for all the cleanup materials employed in this emissions unit:

- a. the name and identification of each cleanup material employed;
- b. the OC content of each cleanup material employed, in pounds per gallon;
- c. the number of gallons of each cleanup material employed;
- d. the OC emissions from each cleanup material employed [d(3)b x d(3)c];
- e. the total OC emissions per month from all the cleanup materials employed [summation of d(3)d for all cleanup materials], in pounds; and
- f. the total OC emissions per calendar year from all cleanup materials employed, calculated by summing the monthly OC emissions from d(3)e. and dividing by 2000 lbs/ton.

- (4) The permittee shall monitor at least once every fifteen minutes the pressure drop across the carbon adsorber serving the vacuum pump, and across the baghouse(s) (fabric filter) serving the end brushing operation, during operation of this emissions unit, and record the average of those values over the period during which this emissions unit operates each day. For purposes of this requirement, the permittee shall record one average total pressure drop value for each control device each day, for a period beginning at midnight or such time after midnight when the emissions unit begins to operate and ending at the time the emissions unit ceases that day or at midnight should the emissions unit operate



beyond midnight. If the emissions unit starts and stops more than once during this 24-hour period, the permittee shall record the average value for the time during this 24-hour period when the emissions unit is in operation. Hereinafter this value shall be called a "Daily Pressure Drop Value".

Whenever the Daily Pressure Drop Value is outside of the applicable range specified below (hereinafter the "Pressure Drop Range"), the permittee shall promptly conduct an investigation to determine if there is a malfunction of the carbon adsorber or either baghouse (whichever is producing a Daily Pressure Drop Value outside of its Pressure Drop Range), and if so, comply with the requirements of OAC rule 3745-15-06. For each such occasion (i.e. when a Daily Pressure Drop Value is outside of its Pressure Drop Range), the permittee shall record the number of days during which the Daily Pressure Drop Value remained outside of its Pressure Drop Range and a description of the maintenance or repairs, if any, made to the carbon adsorber or either baghouse(s). If upon the investigation the permittee determines there is no malfunction that is subject to OAC rule 3745-15-06, the permittee shall also maintain records documenting the basis for such determination.

The Pressure Drop Ranges are:

- a. for the carbon adsorber, 0.01 to 5.0 inches of water.
 - b. for the P008 baghouse, 0.2 to 6.0 inches of water.
- (5) These Pressure Drop Ranges are effective for the duration of this permit, unless revisions are requested by the permittee and approved in writing by the Ohio EPA, Northwest District Office. The permittee may request revisions to the range(s) based upon information that demonstrates compliance with the allowable mercury emission rate (for the carbon adsorber) or particulate emission rate (for the baghouse) for this emissions unit. If the permittee submits a written request to establish a new Pressure Drop Range, Ohio EPA shall promptly evaluate and act on that request and, if approved, incorporate the new range into this permit as a minor permit modification.

e) Reporting Requirements

- (1) The permittee shall notify the Northwest District Office in writing of any monthly record showing the use of base cement exceeding 3.5 pounds of volatile organic compounds (VOC) per gallon of coating, excluding water and exempt solvents. The notification shall include a copy of such record and shall be sent to the Northwest District Office within 30 days following the end of the calendar month.
- (2) The permittee shall submit semiannual reports that identify the following information concerning the operation of the carbon adsorber during operation of this emissions unit:
 - a. the total duration (in days) that its Daily Pressure Drop Value was outside of its applicable Pressure Drop Range; and
 - b. any and all omissions of the monitoring, record keeping, investigation, and malfunction reporting requirements specified in d)(4).



These semiannual reports shall be submitted by January 31 for the six-month period ending December 31 and by July 31 for the six-month period ending June 30.

- (3) The permittee shall submit semiannual reports that identify the following information concerning the operation of the baghouse (fabric filter) during operation of this emissions unit:
- a. the total duration (in days) that its Daily Pressure Drop Value was outside of its applicable Pressure Drop Range; and
 - b. any and all omissions of the monitoring, record keeping, investigation, and malfunction reporting requirements specified in d)(4).

These semiannual reports shall be submitted by January 31 for the six-month period ending December 31 and by July 31 for the six-month period ending June 30.

- (4) The permittee shall submit quarterly deviation (excursion) reports that identify all exceedances of the following limitations:
- a. the monthly OC emission limitation of 2.82 pounds (from cleanup materials).

The permittee shall submit these reports in accordance with the Standard Terms and Conditions of this permit.

- (5) The permittee shall submit annual reports that summarize the actual annual OC emissions from lamp processing and base bake operations for this emissions unit for the previous calendar year. These reports shall be submitted by January 31 of each year.
- (6) The permittee shall submit annual reports that summarize the actual annual OC emissions from cleanup for this emissions unit for the previous calendar year. These reports shall be submitted by January 31 of each year.
- (7) The permittee shall submit quarterly summaries that include a log of the downtime for the capture (collection) system, control device and monitoring equipment when the associated emissions unit was in operation.

f) Testing Requirements

- (1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitation:

4.41 lbs OC/hour

Applicable Compliance Method:

The hourly allowable OC emission rate was established based on the summation of the OC emissions generated during lamp manufacturing and OC emissions generated during lamp base bake operations. Emissions of OC resulting from



combustion and clean up at this source are excluded from this limit. The following outlines potential emissions generated during each process:

- i. Lamp manufacturing - the potential to emit for lamp manufacturing is 0.35 lbs of OC per hour based on the summation of emissions from the following components of the line and a maximum lamp manufacturing rate of 8000 lamps per hour:

Phosphor Top Coating – 0.024 pounds of OC per hour (based on a maximum coating usage rate of 2.54 gal/1000 lamps and a maximum OC content of 0.0012 lb VOC/gal).

Phosphor Base Coating – 0.005 pounds of OC per hour (based on a maximum coating usage rate of 0.53 lb/1000 lamps and a maximum OC content of 0.0012 lb VOC/gal).

Monogram Ink - 0.04 pound of OC per hour (based on a maximum ink usage rate of 0.0021 liters/1000 lamps and a maximum OC content of 8.09 lb/gal, plus a maximum diluent usage rate of 0.002 liters/1000 lamps and a maximum OC content of 9.34 lb/gal).

Headmarking Ink - 0.039 pound of OC per hour (based on a maximum ink usage rate of 0.0002 liters/1000 lamps and a maximum OC content of 5.51 lb/gal, plus a maximum diluent solvent usage rate of 0.0025 liters/1000 lamps and maximum OC content of 6.76 lb/gal).

E-Mix - 0.24 pound of OC per hour (based on a maximum usage rate of 0.02 liters/1000 lamps and a maximum OC content of 40% by weight).

Dri-Film - 0.00011 pound of OC per hour (based on a maximum usage rate of 1.6 grams/1000 lamps and a maximum OC content of 0.4% by weight).

- ii. Lamp base bake operations - the potential to emit for lamp base bake operations on this emissions unit is 3.22 lbs of OC per hour based on a maximum lamp base baking rate of 8000 lamps per hour and a maximum cement usage rate of 4.41 lbs/1000 lamps, a maximum OC content of 9.32 % by weight and a maximum emission rate of 98% (98% for this emissions unit, i.e. 2% of the OC is emitted during base cement mixing).
- iii. Basefill machine lube operations – the potential to emit for basefill machine lube operations is 0.84 lbs OC/hour based on a maximum basefill machine lube usage rate of 0.125 gallons/hour and an emissions factor of 6.71 lbs OC/gallon.

If required, the permittee shall demonstrate compliance in accordance with Methods 1 - 4, 18, 25, or 25A, as appropriate, of 40 CFR, Part 60, Appendix A.



b. Emission Limitation:

19.32 tons OC/year

Applicable Compliance Method:

Compliance with the OC emission limitation above shall be demonstrated based on the monitoring and record keeping requirements established in d)(2).

c. Emission Limitation:

2.82 lbs OC/month, from cleanup materials

Applicable Compliance Method:

Compliance with the OC emission limitation above shall be demonstrated based on the monitoring and record keeping requirements established in d)(3).

d. Emission Limitation:

0.02 ton OC/year, from cleanup materials

Applicable Compliance Method:

Compliance with the OC emission limitation above shall be demonstrated based on the monitoring and record keeping requirements established in d)(3) and shall be the summation of the 12 OC emission rates for the calendar year.

e. Emission Limitation:

3.53 lbsNO_x/hour (natural gas combustion)

Applicable Compliance Method:

The hourly allowable NO_x emission limitation was established by multiplying the maximum natural gas usage rate of 35,257 cu. ft /hr by the AP-42 emission factor of 100 lbs of NO_x/mm cu. ft (AP-42, Section 1.4, Table 1.4-1 [revised 7/98]).

If required, the permittee shall demonstrate compliance in accordance with Methods 1- 4 and 7 of 40 CFR, Part 60, Appendix A.

f. Emission Limitation:

2.96 lb CO/hour (natural gas combustion)

Applicable Compliance Method:

The hourly allowable CO emission limitation was established by multiplying the maximum natural gas usage rate of 35,257 cu. ft /hr by the AP-42 emission factor of 84 lbs of CO/mm cu. ft (AP-42, Section 1.4, Table 1.4-1 [revised 7/98]).



If required, the permittee shall demonstrate compliance in accordance with Methods 1- 4 and 10 of 40 CFR, Part 60, Appendix A.

g. Emission Limitation:

0.01 lb PE/hour (end brushing)

Applicable Compliance Method:

The hourly allowable PE limitation was established by multiplying the maximum phosphor coating application rate of 12.56 lbs/1000 lamps by the production rate of 8000 lamps per hour, a removal rate of 1% of the phosphor applied, and then multiplying by a control factor (1-0.99*).

If required, the permittee shall demonstrate compliance in accordance with Methods 1- 5 of 40 CFR, Part 60, Appendix A.

* thebaghouse control efficiency is assumed to be $\geq 99\%$.

h. Emission Limitation:

Visible PE shall not exceed 5% opacity, as a six-minute average (end brushing)

Applicable Compliance Method:

If required, compliance shall be determined in accordance with the test method and procedures in Method 9 of 40 CFR, Part 60, Appendix A.

i. Emission Limitation:

0.84 lb SO₂/hour (SO₂ lubricant)

Applicable Compliance Method:

The hourly allowable SO₂ emission limitation was established by summing the maximum of 0.11 lb of SO₂/hour injected in the Lehr and 0.73 lb of SO₂/hour injected in the flare machines.

If required, the permittee shall demonstrate compliance in accordance with Methods 1 - 4 and 6 of 40 CFR, Part 60, Appendix A.

j. Emission Limitation:

0.35 lbNO_x/hour (binder combustion)

Applicable Compliance Method:

The hourly allowable NO_x emission limitation was established by multiplying the maximum phosphor base coating application rate of 0.53 gal/1000 lamps by the maximum lamp processing rate of 8000 lamps per hour and by 0.084 lb of



NOx/gal of binder. This assumes all ammonia in the coating is converted to NOx.

If required, the permittee shall demonstrate compliance in accordance with the test methods and procedures in Methods 1- 4 and 7 of 40 CFR, Part 60, Appendix A.

k. Emission Limitation:

0.0004 lb Hg/hour

Applicable Compliance Method:

Compliance with this emission limitation was demonstrated with the results of emissions testing conducted on November 18, 2003.

If required, the permittee shall conduct any future compliance demonstration with the emission limitation in accordance with Methods 1 through 4 and 29 of 40 CFR, Part 60, Appendix A.

l. Emission Limitation:

15.44 tons NOx/year (natural gas combustion)

12.97 tons CO/year (natural gas combustion)

0.79 ton PE/year (end brushing)

3.68 tons SO₂/year (SO₂ lubricant)

1.6 ton NOx/year (binder combustion)

0.002 ton Hg/year

Applicable Compliance Method:

The annual emission limitation for each pollutant was determined by multiplying the hourly emission limitation for the specific pollutant by 8760, and then dividing by 2000. Therefore, provided compliance is shown with the hourly emissions limitation, compliance with the annual emissions limitation shall also be demonstrated.

- (2) Formulation data or U.S. EPA Method 24 shall be used to determine the OC/VOC contents of all the coatings and cleanup materials.

g) Miscellaneous Requirements

- (1) None.



3. P035, L-7

Operations, Property and/or Equipment Description:

L-7 High Speed Horizontal Lamp Assembly Line - HSH IV (Modification to increase current permit emission limitations)

- a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.
 - (1) b)(1)h. and d)(1).
- b) Applicable Emissions Limitations and/or Control Requirements
 - (1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	ORC 3704.03(T) (Administrative modification to PTI P0105519, issued 04/20/2010, to update emissions factors)	22.33 tons organic compounds (OC)/rolling, 12-month period from coating and cleanup operations 17.5 tons Nitrogen Oxide (NOx)/rolling, 12-month period from natural gas combustion and binder combustion 12.97 tons Carbon Monoxide (CO)/rolling 12-month period from natural gas combustion
b.	OAC rule 3745-31-05(F)	0.01 lb particulate less than 10 micron in size (PM10)/hr& 0.04 ton PM10/yr from end brushing Visible particulate emissions PE from end brushing shall not exceed 5% opacity, as a six-minute average. See b)(2)a.
c.	OAC rule 3745-21-09 (U)(1)(d)	3.5 pounds of volatile organic compounds (VOC) per gallon of coating, excluding water and exempt solvents [for the coatings used for the metal parts (base cement coatings)]
d.	OAC rule 3745-31-05(D)	Emissions of carbon dioxide equivalents (CO ₂ e) from the entire facility shall not exceed 74,000 tons per rolling 12-month



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		period [see Facility-Wide Terms and Conditions – B.2]
e.	OAC rule 3745-17-11 (B)(2)	See b)(2)a.
f.	OAC rule 3745-17-07 (A)(1)	See b)(2)b.
g.	OAC rule 3745-18-06 (E)	Exempt [see b)(2)c.]
h.	OAC rule 3745-114 and ORC 3704.03 (F)	See d)(1)
i.	OAC rule 3745-31-05(A)(3), as effective 11/30/01	1.21 lbs sulfur dioxide (SO ₂)/hr & 5.30 tons SO ₂ /yr from sulfur lubricant operations See b)(2)d. and b)(2)e.
j.	OAC rule 3745-31-05 (A)(3)(a)(ii), as effective 12/01/06	See b)(2)f.

(2) Additional Terms and Conditions

- a. This permit establishes the following voluntary restrictions for the purpose of establishing legally and practically enforceable limitations representing the potential to emit (PTE). These emissions limitations are based on the operational restriction contained in c)(1) which requires control equipment:
 - i. 0.01 lbs PM₁₀/hr and 0.04 tons PM₁₀/yr; and
 - ii. Visible particulate emissions (PE) shall not exceed 5% opacity, as a six-minute average.
- b. The uncontrolled mass rate of particulate emissions (PE) is less than 10 lbs/hr. Therefore, pursuant to OAC rule 3745-17-11 (A)(2)(a)(ii), Figure II of OAC rule 3745-17-11 does not apply. In addition, Table I of OAC rule 3745-17-11 does not apply because the facility is located in Crawford County, which is identified as a P-2 county.
- c. This emissions unit is exempt from the visible particulate emission limitations specified in OAC rule 3745-17-07 (A), pursuant to OAC rule 3745-17-07 (A)(3)(h), because OAC rule 3745-17-11 is not applicable.
- d. The maximum process weight rate for this emissions unit is less than 1000 lbs/hr. Therefore, pursuant to OAC rule 3745-18-06 (C), this emissions unit is exempt from OAC rule 3745-18-06.
- e. The BAT requirements under OAC rule 3745-31-05(A)(3), effective 11/30/01 have been determined to the following:
 - i. The following mass emission rate limitation:



- (a) 1.21 lbs sulfur dioxide SO₂/hr & 5.30 tons SO₂/hr from sulfur lubricant operations;
- ii. compliance with the requirements established under ORC 3704.05(T);
- iii. compliance with the requirements established under OAC rule 3745-31-05(F); compliance with OAC rule 3745-21-09(U)(1)(d); and
- iv. compliance with OAC rule 3745-31-05(D).

It should be noted that the voluntary restrictions established under OAC rule 3745-31-05(F) were established with the intentional purpose of avoiding BAT requirements under OAC rule 3745-31-05(A)(3), as effective 12/01/06 [see b)(2)d.].

The permittee has satisfied the Best Available Technology (BAT) requirements pursuant to OAC paragraph 3745-31-05 (A)(3), as effective November 30, 2001, in this permit. On December 1, 2006, paragraph (A)(3) of OAC rule 3745-31-05 was revised to conform to ORC changes effective August 3, 2006 (S.B. 265 changes), such that BAT is no longer required by State regulations for NAAQS pollutant less than ten tons per year. However, that rule revision has not yet been approved by U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-31-05, the requirement to satisfy BAT still exists as part of the federally-approved SIP for Ohio. Once U.S. EPA approves the December 1, 2006 version of 3745-31-05, then these emission limits/control measures no longer apply.

It should be noted that the requirements established pursuant to OAC rule 3745-31-05(F) will remain applicable after the above SIP revisions are approved by U.S. EPA.

- f. This rule paragraph applies once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05 as part of the State Implementation Plan.

The Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3) do not apply to the SO₂ emissions from this air contaminant source since the uncontrolled potential to emit for SO₂ is less than 10 tons/year.

Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3)(a) do not apply to the PM₁₀ emissions from this air contaminant source since the controlled potential to emit (PTE) is less than 10 tons per year taking into consideration practically and legally enforceable voluntary restrictions established under OAC rule 3745-31-05(F) in this permit.

The potential to emit SO₂ is 5.3 tons per year and is the summation of SO₂ emissions from the glass tube flare machine operations and the Lehr Oven. These emissions were calculated as follows:



- b. the total number of lamps processed;
- c. the total OC emissions from the coatings and inks employed, calculated in accordance with the following equation:

$$\text{OC emissions (lbs/month)} = (\text{thousand lamps processed/month}) \times (A + B + C + D + E + F + G + H)$$

where:

A = emission factor for phosphor top coat:
maximum gallons of coating/1000 lamps (3.2) x maximum OC content in lb/gal (0.0012) = 0.0038 lb of OC/1000 lamps

B = emission factor for phosphor base coat:
maximum gallons of coating/1000 lamps (0.659) x maximum OC content in lb/gal (0.0012) = 0.0008 lb of OC/1000 lamps

C = emission factor for monogram ink:
maximum liters of ink/1000 lamps (0.0021) / 3.78 liters/gallon x maximum OC content in lb/gal (8.09) = 0.0045 lb of OC/1000 lamps

D = emission factor for monogram ink diluent solvent:
maximum liters of ink/1000 lamps (0.0002) / 3.78 liters/gallon x maximum OC content in lb/gal (9.34) = 0.00049 lb of OC/1000 lamps

E = emission factor for headmarking ink:
maximum liters of ink/1000 lamps (0.0002) / 3.78 liters/gallon x maximum OC content in lb/gal (5.51) = 0.00029 lb of OC/1000 lamps

F = emission factor for headmarking ink diluent solvent:
maximum liters of solvent/1000 lamps (0.0025) / 3.78 liters/gallon x maximum OC content in lb/gal (6.76) = 0.00447 lb of OC/1000 lamps

G = emission factor for E-Mix:
maximum liters of E-Mix/1000 lamps (0.017) / 3.78 liters/gallon x 16.68 lb E-Mix/gallon x maximum OC content weight fraction (0.4) = 0.03 lb of OC/1000 lamps

H = emission factor for Dry-Film:
maximum grams of Dry-Film/1000 lamps (2.0) / 454g/lb x maximum weight fraction (0.004) = 1.76E-05 lb of OC/1000 lamps; and

- d. the total OC emissions from all the base cement employed on this emissions unit, calculated in accordance with the following equation:

$$\text{OC emissions from base bake operations (lbs/month)} = (\text{thousand lamps processed/month}) \times (\text{EF})$$



where

EF = emission factor for base cement:

EF (lb OC/1000 lamps) = maximum lbs cement/1000 lamps (4.40) x maximum OC content weight fraction (0.093) x 0.98* = 0.401

* 2% of the OC is emitted elsewhere

- (4) The permittee shall collect and record the following information each month for all the cleanup materials employed in this emissions unit:
- a. the name and identification of each cleanup material employed;
 - b. the OC content of each cleanup material employed, in pounds per gallon;
 - c. the number of gallons of each cleanup material employed;
 - d. the OC emissions from each cleanup material employed [d)(4)b. x d)(4)c.];
 - e. the total OC emissions per month from all the cleanup materials employed [summation of d)(4)d. for all cleanup materials], in pounds.
- (5) The permittee shall collect and record the following each month for total OC emissions for this emissions unit:
- a. the total OC emissions each month calculated as follows:

total OC emissions (tons/month) = {the total OC emissions from lamp processing [from d)(3)d] + the total OC emissions from base bake operations [from d)(3)e] + the total OC emissions from cleanup materials usage [from d)(4)e]} /2000;
 - b. the rolling, 12-month summation of OC emissions.
- (6) The permittee shall monitor at least once every fifteen minutes the pressure drop across the baghouse (fabric filter) serving the end brushing operation during operation of this emissions unit, and record the average of those values over the period during which this emissions unit operates each day. For purposes of this requirement, the permittee shall record one average total pressure drop value for the control device each day, for a period beginning at midnight or such time after midnight when the emissions unit begins to operate and ending at the time the emissions unit ceases that day or at midnight should the emissions unit operate beyond midnight. If the emissions unit starts and stops more than once during this 24-hour period, the permittee shall record the average value for the time during this 24-hour period when the emissions unit is in operation. Hereinafter this value shall be called a "Daily Pressure Drop Value".

Whenever the Daily Pressure Drop Value is outside of the applicable range specified below (hereinafter the "Pressure Drop Range"), the permittee shall promptly conduct an investigation to determine if there is a malfunction of the baghouse, and if so, comply with the requirements of OAC rule 3745-15-06. For each such occasion (i.e. when a



Daily Pressure Drop Value is outside of its Pressure Drop Range), the permittee shall record the number of days during which the Daily Pressure Drop Value remained outside of its Pressure Drop Range and a description of the maintenance or repairs, if any, made to the baghouse. If upon the investigation the permittee determines there is no malfunction that is subject to OAC rule 3745-15-06, the permittee shall also maintain records documenting the basis for such determination.

The Pressure Drop Range is:

- a. for the end brushing baghouse, 0.2 to 6.0 inches of water.
- (7) The pressure drop range is effective for the duration of this permit, unless revisions are requested by the permittee and approved in writing by the Ohio EPA, Northwest District Office. The permittee may request revisions to the range(s) based upon information that demonstrates compliance with the allowable particulate emission rate (for the baghouse) for this emissions unit. If the permittee submits a written request to establish a new pressure drop range, Ohio EPA shall promptly evaluate and act on that request and, if approved, incorporate the new range into this permit as a minor permit modification.
- e) Reporting Requirements
- (1) The permittee shall notify the Northwest District Office in writing of any monthly record showing the use of base cement exceeding 3.5 pounds of volatile organic compounds (VOC) per gallon of coating, excluding water and exempt solvents. The notification shall include a copy of such record and shall be sent to the Northwest District Office within 30 days following the end of the calendar month.
 - (2) The permittee shall submit semiannual reports that identify the following information concerning the operation of the baghouse (fabric filter) during operation of this emissions unit:
 - a. the total duration (in days) that its Daily Pressure Drop Value was outside of its applicable Pressure Drop Range; and
 - b. any and all omissions of the monitoring, record keeping, investigation, and malfunction reporting requirements specified in d)(6) of this permit.

These semiannual reports shall be submitted by January 31 for the six-month period ending December 31 and by July 31 for the six-month period ending June 30
 - (3) The permittee shall submit quarterly deviation (excursion) reports that identify all exceedances of the rolling, 12-month OC emissions limitation of 22.33 tons.
 - (4) The permittee shall submit quarterly summaries that include a log of the downtime for the capture (collection) system, control device and monitoring equipment when the associated emissions unit was in operation.
 - (5) Quarterly reports and summaries, annual reports, and semiannual reports shall be submitted in accordance with the reporting requirements of the Standard Terms and



Conditions of this permit, and shall be submitted electronically through Ohio EPA Air Services, by the dates indicated for each type of submission.

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitation:

22.33 tons OC/rolling, 12-month period

Applicable Compliance Method:

Compliance with the OC emission limitation above shall be demonstrated based on the monitoring and recordkeeping established in section d)(5) of this permit.

b. Emission Limitation:

17.5 tons NO_x/rolling, 12-month period from natural gas combustion and binder combustion

Applicable Compliance Method:

The allowable NO_x emission limitation was established by summing NO_x emissions from natural gas combustion as well as emissions from the binder combustion as calculated below:

Natural gas combustion emissions were determined by multiplying the maximum natural gas usage rate of 35,257 cu. ft./hr. by the AP-42 emission factor of 100 lbs. NO_x/mm. cu. ft. (AP-42, Section 1.4, Table 1.4-1 [revised 7/98]), and using conversion factors for 10⁶ cu. ft./mm. cu. ft., 8760 hrs./yr., and 2000 lbs./ton.

NO_x emissions from the binder combustion were determined by multiplying the maximum phosphor base coating application rate of 0.66 gallons phosphor base coating/1000 lamps by the maximum production rate of 8500 lamps/hr and the emission factor of 0.084 lb. NO_x/lb. of binder, and using conversion factors for 8760 hrs./yr. and 2000 lbs./ton.

If required, the permittee shall demonstrate compliance in accordance with the test methods and procedures in Methods 1-4 and 7 of 40 CFR, Part 60, Appendix A.

c. Emission Limitation:

0.01 lb PM₁₀/hr



Applicable Compliance Method:

The hourly allowable PM10 limitation was established by multiplying the maximum phosphor coating application rate of 12.56 lbs/1000 lamps by the production rate of 8500 lamps per hour, a removal rate of 1% of the phosphor applied, and then multiplying by a control factor (1-0.99*).

If required, the permittee shall demonstrate compliance in accordance with Methods 1-4 of 40 CFR, Part 60, Appendix A and Methods 201/201A and 202 of 40 CFR, Part 51, Appendix M.

*the baghouse control efficiency is assumed to be 99%

d. Emission Limitation:

Visible PE shall not exceed 5% opacity, as a six-minute average (end brushing)

Applicable Compliance Method:

If required, compliance shall be determined in accordance with the test method and procedures in Method 9 of 40 CFR, Part 60, Appendix A.

e. Emission Limitation:

12.97 tons CO/rolling 12-month period from natural gas combustion

Applicable Compliance Method:

The allowable CO emission limitation was established by multiplying the maximum natural gas usage rate of 35,257 cu. ft/hr by the AP-42 emission factor of 84 lbs of CO/mm cu.ft (AP-42, Section 1.4, Table 1.4-1 [revised 7/98]), and using conversion factors for 10⁶ cu. ft./mm. cu. ft., 8760 hrs./yr., and 2000 lbs./ton.

If required, the permittee shall demonstrate compliance in accordance with the Methods 1-4 and 10 of 40 CFR, Part 60, Appendix A.

f. Emission Limitation:

1.21 lbs SO2/hr

Applicable Compliance Method:

The hourly allowable SO2 emission limitation was established by summing the maximum of 0.11 lb of SO2/hr injected in the Lehr and 1.1 lbs SO2/hr injected in the flare machines.

If required, the permittee shall demonstrate compliance in accordance with Methods 1-4 and 6 of 40 CFR, Part 60, Appendix A.



g. Emission Limitations:

0.04 ton PM10/yr
5.30 tons SO2/yr

Applicable Compliance Method:

The annual emission limitation for each pollutant was determined by multiplying the hourly emission limitation for the specific pollutant by 8760, and then dividing by 2000. Therefore, provided compliance is shown with the hourly emissions limitation, compliance with the annual emissions limitation shall also be demonstrated.

h. Emission Limitation:

3.5 pounds of VOC/gallon of coating, excluding water and exempt solvents [for the coatings used for the metal parts (base cement coatings)]

Applicable Compliance Method:

Compliance with the OC emission limitation above shall be demonstrated based on the monitoring and recordkeeping established in section d)(2) of this permit.

- (2) Formulation data or U.S. EPA Method 24 shall be used to determine the OC/VOC contents of all the coatings and cleanup materials.

g) Miscellaneous Requirements

- (1) None.