

ABB, INC. – TUCSON SERVICE CENTER

AIR QUALITY PERMIT 6025

TECHNICAL SUPPORT DOCUMENT (TSD)

I. GENERAL COMMENTS:

A. Company Information

1. Source Name: ABB, Inc. – Tucson Service Center
2. Source Address: 1401 E. Valencia Road, Tucson, AZ 85706

B. Background

ABB, Inc. (ABBI) currently operates under an older Class III air quality permit. It is considered a true minor source of all regulated pollutants and area source of HAPs. The facility is required to maintain a permit in accordance with PCC 17.12.140.A. and 17.12.140.B.3.c

ABBI's Tucson Service Center repairs various heavy electrical and mechanical equipment including electric motors, armatures, generators, alternators, transformers, switchgear and traction motors. The permitted stationary emission sources at the facility consist of a heat cleaning oven, and bake oven and organic solvent and surface coating operations. The heat curing oven is used to thermally de-laminate the insulation/copper matrix, originally formed through the application of an electrical varnish to copper windings and subsequent curing.

The activities and operations covered by this permit are those stationary sources which fall under the following industrial classification:

- SIC Code: 7699 – Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance (NAICS 811310)

This TSD was updated following an application for transfer of the permit to ABB, Inc. A minor permit revision was issued on February 26, 2018 for the replacement of a heat bake oven with a comparable new unit. The permit was last renewed on November 10, 2016

C. Attainment Classification

ABB's Tucson Service Center is located in an area that is in attainment for all pollutants.

II. SOURCE DESCRIPTION

A. Process Description

The ABBI Tucson Service Center repairs various heavy electrical and mechanical equipment including electric motors, armatures, generators, alternators, transformers, switchgear and traction motors. The permitted stationary emission sources at the facility consist of two natural gas fossil fuel fired industrial ovens and operations that involve the use and application of organic solvents and surface coatings. The heat cleaning oven is used to thermally de-laminate the insulation/copper matrix, originally formed through the application of an electrical varnish to copper windings and subsequent curing. The bake oven is a fossil fuel fired unit used to cure coatings.

B. Operating Capacity and Schedule

The operating schedule at the facility is not limited and the facility and equipment is permitted for operation 7/days/week, 24 hours a day, 365 days a year. Emissions from organic solvent use and the surface coating operations are inherently limited. The facility and equipment constitutes a minor source of regulated pollutants and an area source of HAPs

C. Air Pollution Control Equipment

Emissions from the heat cleaning oven are controlled by an afterburner that is intrinsically built into the oven.

III. REGULATORY HISTORY

The ABB, Inc. - Tucson Service Center is currently in compliance with all Pima County Code requirements.

IV. EMISSIONS ESTIMATES

Emission estimates for the heat cleaning oven are based on data from Steelman Industries (the manufacturer). Generic emission rates from an oven with a lower input and processing rate were presented in the permit application, therefore to obtain maximum potential emissions (relative to the heat cleaning oven process rate), the test emissions have been scaled up by 2.34.

Pollutant	Test Oven (lbs/hr)	Multiplier	Estimated Emissions (lbs/hr)	Estimated Emissions (tons/yr)
Nitrogen Oxides (NO _x)	0.10	x 2.34	<0.233	1.02
Carbon Monoxide (CO)	<0.01	x 2.34	<0.023	0.10
Particulate Matter (as PM ₁₀)	0.02	x 2.34	0.047	0.21
Sulfur Oxides (SO _x)	<0.01	x 2.34	<0.023	0.10
Hazardous Air Pollutants (HAPs)	<0.02	x 2.34	<0.047	0.21

Emission estimates from the Steelman Bake (Curing) Oven are derived from the use of AP-42 emission factors. The following table below outlines the estimated emissions.

Pollutant	Estimated Emissions (tons/yr)
Nitrogen Oxides (NO _x)	0.86
Carbon Monoxide (CO)	0.72
Particulate Matter (as PM ₁₀)	0.02
Sulfur Oxides (SO _x)	<0.01
Volatile Organic Compounds (VOCs)	0.05
Hazardous Air Pollutants (HAPs)	0.05

The ABB, Inc. Tucson Service Center as part of their repair and refurbishing processes use organic solvents and conduct surface coating operations that have the potential to emit Hazardous Air Pollutants and VOC. The potentials for these emissions are inherently limited by the number of repairs that can be accommodated in each process as presented in the renewal permit application and the VOC and HAP content of the coatings and solvents used. Emission estimates from the use of organic solvents and surface coating operations were conservatively estimated using the maximum materials usage, MSDS technical data sheets of the materials used and multiplied by a safety factor (SF) of 2 in most cases. The facility is an area source of Hazardous Air Pollutants.

The Control Officer has considered the estimated emissions presented in the renewal application and approved PTE document and deemed a number of the shop equipment and operations to be de minimus or insignificant activities in accordance with PCC 17.04.340.A.114. These activities along with their capacity are listed in the insignificant activity list in the permit.

The emissions of pollutants from the insignificant activities are less than 10 tpy of regulated pollutants, and less than 1 tpy of HAP.

The following table summarizes the facility-wide potential to emit of the source. These emission values are taken from the information contained in the renewal application, and using standard emission factors in from AP-42 Compilation of Air Pollution Emission Factors – Volume 1: Stationary and Area Sources. The emission values are for information purposes only and are not intended to be enforceable limits.

Facility-Wide Potential Emissions of Pollutants ¹ (tons/yr)										
Conventional or Criteria Air Pollutant								NSP S	HAPs	
PM _{2.5}	PM ₁₀	PM	NO _x	VOC	CO	SO ₂	Lead	N/A	Total	Single
0.23	0.23	0.23	1.88	9.90	0.82	0.10	Negligible	-	< 5.01	< 2.43

¹ Emission estimates from permitted equipment and operations as provided in the renewal application and the Minor Revision issued February 26, 2018.

V. APPLICABLE REQUIREMENT

40 CFR, Part 60 Standards of Performance for New Stationary Sources (NSPS)

Appendix A Test Methods

Title 17, Chapter 17.11 – General Provisions for Permits

Article I – General Provisions

- 17.11.010 Statutory Authority
- 17.11.020 Planning, Constructing, or Operating Without a Permit

Article II – General Provisions for Stationary Source Permits

- 17.11.060 Permit Display or Posting
- 17.11.120 Material Permit Condition
- 17.11.160 Test Methods and Procedures
- 17.11.210 Performance tests

Title 17, Chapter 17.13 – Individual and General Permits and Permit Revisions for Class II and Class III Permits

Article I – General Provisions

- 17.13.010 Application processing procedures
- 17.13.020 Permit Contents

Article II – Permit Revisions, Renewals and Transfers for Class II and Class III Permits

- 17.13.100 Facility changes that require a revision
- 17.13.110 Procedures for certain changes that do not require a permit revision
- 17.13.130 Minor revisions
- 17.13.140 Significant revisions
- 17.13.150 Reopening, revocation, or termination

Article III – Emissions for Class II and Class III Sources

- 17.13.180 Annual Emissions Inventory Questionnaire
- 17.13.190 Excess Emissions Reporting Requirements

Article V – Fees for Class II, Class III, and General Permits

- 17.13.240 Fees related to Class II and Class III Sources

Title 17, Chapter 17.14 – Activity Permits

- 17.14.060 Asbestos NESHAP activity permits

Title 17, Chapter 17.16 – Emission Limiting Standards

Article I – General Provisions

- 17.16.010 Local rules and standards; Applicability of more than one standard
- 17.16.020 Noncompliance with applicable standards
- 17.16.030 Odor limiting standards

Article II – Visible Emission Standards

- 17.16.040 Standards and applicability (includes NESHAP)
- 17.16.050 Visibility limiting standard

Article IV – New and Existing Stationary Source Performance Standards

- 17.16.130 Applicability
- 17.16.165 Standards of performance for fossil-fuel fired industrial commercial equipment
- 17.16.400 Organic solvents and other organic materials
- 17.16.430 Standards of performance for unclassified sources

Title 17, Chapter 17.20 – Emissions Source Testing and Monitoring

- 17.20.010 Source sampling, monitoring and testing
- 17.20.040 Concealment of emissions

Title 17, Chapter 17.24 – Emission Source Recordkeeping and Reporting

- 17.24.020 Recordkeeping for compliance determination
- 17.24.050 Reporting as a permit requirement

VI. REQUIREMENTS SPECIFICALLY IDENTIFIED AS NON-APPLICABLE

- A. 40 CFR Part 63 NESHAP Subpart JJJJJJ has been identified as non-applicable.
- B. 40 CFR 63.11169, NESHAP Subpart HHHHHH does not apply to the facility.
- C. 40 CFR 63.460 NESHAP Subpart T - does not apply.

VII. PERMIT CHANGES and APPLICABILITY DETERMINATIONS

A. Permit and Permit Summary:

The Specific Conditions have been organized into a facility-wide permit section and a section specific to the source categories of permitted equipment and operations at the facility.

B. General Applicability (Section 1):

This Section of the permit incorporates provisions relating the statutory authority, permit classification, and provides a summary of the permitted facility sources and the organization of the permit sections.

C. Facility-Wide Requirements (Section 2):

This Section incorporates facility-wide requirements applicable to all sources at the facility and is used to streamline provisions applicable to the specific emission source categories and operations in other Sections of the permit. The facility-wide requirements include the following: general control standards, materials handling standards, odor limiting standard, opacity limit, visibility limiting standard, and asbestos requirements for demolition and renovation activities. This Section also includes the facility-wide provisions for monitoring, recordkeeping, reporting requirements, facility changes, and testing requirements.

PDEQ determined that provisions for authorization to conduct fugitive dust producing activities and provisions for monitoring portable sources that have the potential to become regulated as stationary sources were not necessary to be included for this source.

D. Service Center Operations (Section 3):

This Section contains requirements for the permitted heat cleaning and bake ovens and organic solvent and surface coating operations.

Applicability Determination for Surface Coating Operations & Degreasing Units

PDEQ has determined that the general control standards in PCC 17.16.400.A and PCC 17.16.400.C apply to the facility. PCC 17.16.400.C.1 applies to the paint spray booth.

PCC 17.16.400, Subsection C.5 which imposes per gallon VOC limitations on facilities engaged in the surface coating of miscellaneous parts and products does not apply to the facility since the facility is not a primary manufacturer listed in an industrial category under SIC codes, Major Groups 33 – 39 engaged in the coating of miscellaneous metal parts and does not meet the definition of miscellaneous parts and products in PCC 17.04.340.A.316.

Applicable provisions for facility wide surface coating operations, including solvent degreasing are incorporated into the permit directly from PCC 17.16.400.C. Surface coating operations includes spray paint operations except as provided in Tech policy 202 ([see PDEQ Policy No.: TECH-202](#)).

In addition, prohibitions from triggering applicability of NESHAP Subparts T and HHHHHH ([See Summary of Regulations Brochure NESHAP HHHHHH](#) and [40 CFR 63.460](#)) have been included in the permit unless an Initial Notification and permit revision is submitted.

E. Insignificant Activities & Operations (Attachment 3):

A number of facility sources listed in Table 4 of Attachment 3 have been determined by the Control Officer to be insignificant activities on the basis of their size or production rate (de minimus), or by definition in Pima Code. Some processes that use surface coatings have been listed as insignificant activities since there are otherwise no requirements associated with the process units, however the emissions generated from these processes are dependent on the amount of coatings used and the VOC and HAP content of the coatings which are covered by the permit.

VII. Periodic Monitoring

This is a Class III permit and as such does not include the mandatory submittal of a semiannual summary report of required monitoring or an annual compliance certification to the Control Officer. The permit requires the facility to maintain the required periodic monitoring records and/or reports on site.

IX. Control Technology Determination

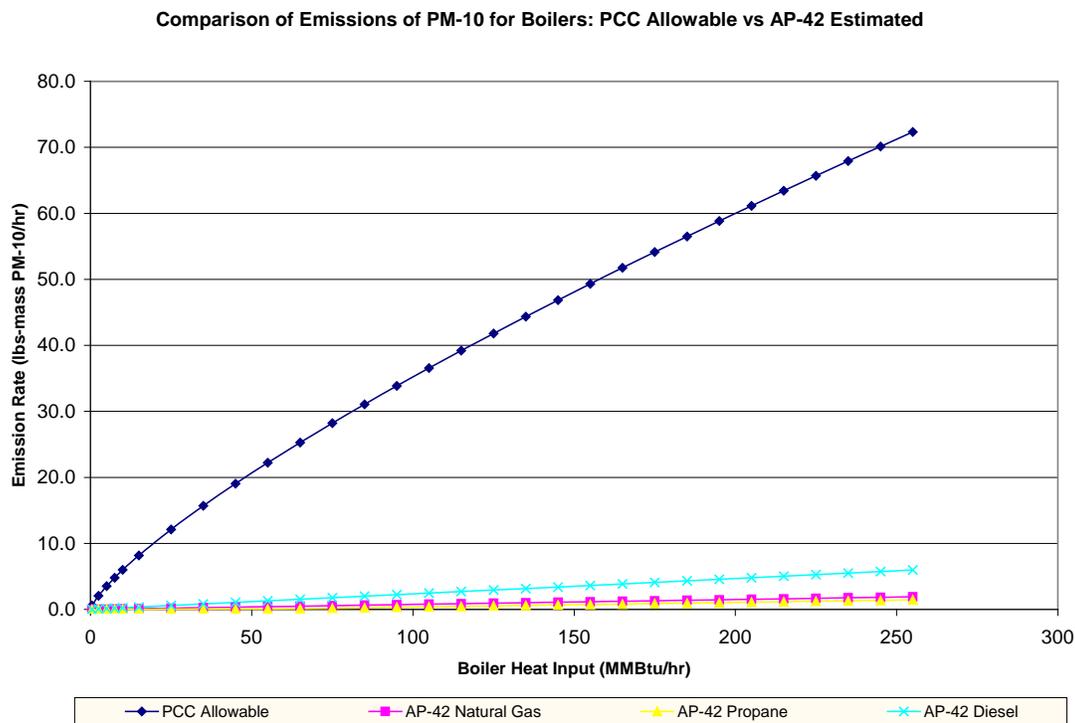
No control technologies needed to be determined; the source is not subject to RACT, BACT or LAER.

X. Exclusion of PCC Particulate Matter Discharge Rate Standards

The applicable PCC rules for the maximum particulate discharge rates are not normally included for Class II area source permits as explained below.

- For particulate matter sources, the calculated maximum particulate matter discharge rate, as provided in Title 17, yields maximum rates that far exceed the emissions expected from most typical area sources. For example a 200 ton/hour process source, which is typical for an average construction aggregate, screening operation, would be limited to a maximum particulate matter discharge rate of 40.4 lbs/hour or 177 tons/year. This limit far exceeds estimated emissions from typical sources using EPA AP-42 emission factors and the source is far more likely to exceed opacity and visibility limiting standards well before reaching this limit.

With regard to fuel burning equipment, PCC 17.16.165.C limits the emissions of particulate matter from commercial and industrial fossil-fuel fired equipment (including but not limited to boilers). This limit is not normally included in permits because allowable emissions are consistently over an entire order of magnitude higher than EPA AP-42 estimated potential emissions. The chart below, illustrates the point.



Comparative Chart of Allowable Particulate Emissions Under Pima County Code, Title 17, and Estimated Potential Emissions based on EPA AP-42 Estimates for External Combustion Sources. Allowable emissions are consistently over ten times estimated potential emissions. Therefore, it is not necessary to include the standard in the permit explicitly, but by reference in Attachment 1.

XI. Exclusion of PCC Sulfur Dioxide Emission Standards

Compliance with the fuel sulfur limitation requirements in the permit shall ensure compliance with the Sulfur Dioxide Standards of PCC 17.16.165.E and 17.16.340.F; which limit the emission of SO₂ to 1.0 pound per million BTU of heat input when burning low sulfur fuel liquid fuels. The definition of low sulfur fuel (PCC 17.04.340.A. "Low Sulfur Fuel") is fuel oil containing less than 0.9 percent sulfur by weight. "High Sulfur Fuel" is defined as fuel oil containing 0.9% wt. or more Sulfur. In accordance with EPA AP-42 Appendix A, page A-5, the heating value of diesel fuel is estimated at 137,000 BTU per gallon. Thus, 1 million BTU of heat input is equivalent to 7.3 gallons of diesel. At 7.05 lbs per gallon, 51.47 lb of diesel will produce 1 million BTU. At 0.9% 51.47 lb of diesel contains 0.46 lbs of sulfur. Combined with Oxygen to form SO₂, and assuming 100% of the sulfur in the fuel forms SO₂, this would yield 0.92 lb SO₂ per 1MMBtu. Thus, low sulfur fuel oil will produce 0.92 lb of SO₂ per million BTU of heat input. This is roughly 8% less than the prescribed 1.0 pound SO₂ per million BTU limit.

An excess emissions report is required to be submitted to the control officer should the fuel oils fired in fuel burning equipment, to include non NSPS / non NESHAP rotating machinery, contain 0.9% wt. Sulfur or greater since the permit explicitly prohibits the use of high sulfur oil by the Permittee.

Jet fuel, natural gas, gasoline, and No. 1 and 2 distillate fuel oils and diesel delivered to Pima County consistently show sulfur levels below this limit as shown in fuel supplier certifications which verify the sulfur content of the fuel fired. The equipment specific sulfur content limitations in the permit and the prohibition to use high sulfur oil allow for the omission of PCC 17.16.165.E and PCC 17.16.340.F. When applicable, these rules are incorporated by reference in Attachment 1 of the permit.

XII. Exclusion of PCC Incinerator Standards

The Steelman heat cleaning oven is installed with an automatic process control (APC). This APC controls the high/low burner control on the afterburner and assures that the afterburner is ready to process vapors at a maximum rate up to 1500 F with a 0.5 second residence time. The APC also controls the primary and backup water sprays to cool down the oven in the event of an afterburner failure or a momentary power failure. In the event that the primary and secondary water sprays are not able to control the rapid temperature rise, the oven will shut down, the afterburner will stay on and the water sprays will continue to operate.

PDEQ has determined that the Heat Cleaning Oven at this facility does not meet the definition of an incinerator as defined in Pima County Code (PCC 17.04.340.A.110). The main factor considered to determine whether the heat cleaning oven is an incinerator is the Pima County Code definition of an incinerator;

PCC 17.04.340.A.110 : "Incinerator" means any equipment, machine, device, contrivance or other article, and all appurtenances thereof, used for the combustion of refuse, salvage materials or any other combustible material except fossil fuels, for the purpose of reducing the volume of material other than those used for pollution control.