west virginia department of environmental protection

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# ENGINEERING EVALUATION / FACT SHEET

## BACKGROUND INFORMATION

| | |
|---|---|
| Application No.: | R13-3162 |
| Plant ID No.: | 049-00033 |
| Applicant: | Soles Enterprises, LLC dba Soles Electric Company (Soles) |
| Facility Name: | Fairmont |
| Location: | Marion County |
| NAICS Code: | 811310 - Commercial and Industrial Machinery and Equipment (Except Automotive and Electronic) Repair and Maintenance |
| Application Type: | After-the-fact Construction |
| Received Date: | November 26, 2013 |
| Engineer Assigned: | John Legg (assigned December 2, 2013) |
| Fee Amount: | $1,000.00 |
| Date Received: | December 2, 2013 |
| Complete Date: | |
| Due Date: | |
| Applicant Ad Date: | 1st Legal Ad - January 24, 2014 (Received February 18, 2014)<br>2nd Legal Ad - April 11, 2014 (Forgot Cleaning Solvent VOCs) (Received April 21, 2014) |
| Newspaper: | *Times West Virginian* |
| UTM's: | Easting: 574.095 km Northing: 4367.292 km Zone: 17 |
| Description: | After-the-fact construction of an electric motor repair shop. According to the permit application the facility started up on January 1, 1985. |

## REASON LEGAL ADVERTISEMENT WAS RE-RUN

Soles forgot to estimate VOC emissions from using cleaning solvents (100% xylene) in the first legal advertisement which ran in the *Times West Virginian* on January 24, 2014. Cleaning solvent usage was later estimated at 15 lb/day and 3,600 lb/yr based on using 500 gal/yr of xylene with an estimated weight of 7.2 lb/gal. Soles re-ran their legal advertisement on April 11, 2014 in the same newspaper.

## DESCRIPTION OF PROCESS

The following process description was taken from Attachment G of the permit application:

a) Items coming into Soles come through Loadout where they are entered into Sole's computer system.

b) Almost all items are sandblasted before tear-down. This process removes all old paint and rust.

c) Tear-down disassembles each item and records any damages that are found at that time.

d) All parts and pieces are either cleaned in the steam room or through 9S (Parts Cleaner).

e) All electrical items are baked in 3S to remove all moisture.

f) All parts and pieces go through inspection to record all mechanical and electrical damage and a scope of work is formed.

g) Any items that are found damaged in inspection are moved to the machine shop for repair.

h) Any items with electrical damage are burnt out in either 1S or 2S then sent to the winding area to be repaired.

i) Items that are rewound in our winding area are VPIed or Dipped in 8S, 6S or 7S. Then cured in 4S (Bake Oven).

j) When all the repairs are completed all items are ressembled in our assembly area.

k) When the repair & assembly is complete, Soles paint the item in a paint booth. Color depends on customer specifications.

When all the above steps have been completed, the item goes back to where it came into the shop: the Load Out area.

## Table 1.0 Emission Units

| Emission Unit ID | Emission Point ID | Emission Unit Description | Year Installed | Design Capacity | Control Device |
|---|---|---|---|---|---|
| 1S | 1E | Steelman Burn Oven | 2013 | 6,000 lb/hr | 1C Afterburner |
| 2S | 2E | Bayco Burn Oven | 2013 | 1,600 lb/hr | 2C Afterburner |
| 3S | 3E | Steelman Bake Oven | 2013 | 6,000 lb/hr | None |
| 4S | 4E | Bayco Bake Oven | 2013 | 1,600 lb/hr | None |
| 5S | 5E | Paint Booth | 2013 | 6,000 lb/hr | 3C Paint Filter |
| 6S | 6E | VPI | 2013 | 6,000 lb/hr | None |
| 7S | 7E | Dip Tank | 2013 | 6,000 lb/hr | None |
| 8S | 8E | Dip Tank | 2013 | 6,000 lb/hr | None |
| 9S | 9E | Parts Cleaner | 2013 | 500 lb/hr | None |
| 10S | 10E | Large Abrasive Blasting | 2013 | 10,000 lb/hr | 4C Baghouse |
| 11S | 11E | Small Abrasive Blasting | 2013 | 6,000 lb/hr | 5C Baghouse |

## Table 2: 1S - Steelman Burnout Oven

| | |
|---|---|
| Name/Type/Model of Source | Steelman Burnout Oven |
| Oven Size | 8' x 8' x 8' |
| Maximum Process Material Charged per hour | 6,000 lbs/hr |
| Maximum Material Produced per hour | 6,000 lbs/hr |
| Fuel | Natural Gas |
| Btu/hr of Burner | 1.255 mm Btu/hr |
| Maximum Design Heat Input | 1.255 mm Btu/hr |
| Projected Operating Schedule | 16 hours/day; 6 days/week; 52 weeks/yr |

| Table 2: 1S - Steelman Burnout Oven | | | | | |
|---|---|---|---|---|---|
| | Pollutant | Emission Rate | | | |
| | | Uncontrolled | | Controlled [1] Afterburner (1C) | |
| | | (lb/hr) | (ton/yr) | (lb/hr) | (ton/yr)* |
| Pollutant | PM | Uncontrolled Emission Rates were listed at the same value as the controlled rate. | | 0.029 | 0.127 |
| | $SO_2$ | | | 0.014 | 0.061 |
| | $NO_x$ | | | 0.143 | 0.63 |
| | CO | | | 0.014 | 0.061 |
| | VOC | | | 0.029 | 0.127 |

* Based on 8,760 hr/yr of operation.
(1) Based on manufacturer stack test data.

| Table 3: 2S - Bayco Burnout Oven | | | | | |
|---|---|---|---|---|---|
| Name/Type/Model of Source | Bayco Burnout Oven; Model BB-180 | | | | |
| Maximum Process Material Charged per hour | 1,628 lbs/hr | | | | |
| Maximum Material Produced per hour | 1,628 lbs/hr | | | | |
| Fuel | Natural Gas | | | | |
| Btu/hr of Burner | 1.255 mm Btu/hr | | | | |
| Maximum Design Heat Input | 1.255 mm Btu/hr | | | | |
| Projected Operating Schedule | 16 hours/day; 6 days/week; 52 weeks/yr | | | | |
| | Pollutant | Emission Rate | | | |
| | | Uncontrolled | | Controlled [1] Afterburner (2C) | |
| | | (lb/hr) | (ton/yr) | (lb/hr) | (ton/yr)* |
| Pollutant | PM | Uncontrolled Emission Rates were listed in the permit application at the same values as the controlled rates. | | 0.135 | 0.5913 |
| | $SO_2$ | | | 0.008 | 0.0351 |
| | $NO_x$ | | | 0.200 | 0.876 |
| | CO | | | 0.098 | 0.43 |
| | VOC | | | 0.034 | 0.15 |

* Based on 8,760 hr/yr of operation.
(1) Based on manufacturer stack test data.

| Table 4: 3S - Steelman Bake Oven | | | | |
|---|---|---|---|---|
| Name/Type/Model of Source | | Steelman Cure Oven; Model 568 -GTC | | |
| Maximum Process Material Charged per hour | | 6,000 lbs/hr | | |
| Maximum Material Produced per hour | | 6,000 lbs/hr | | |
| Fuel | | Natural Gas | | |
| Btu/hr of Burner | | Not Specified in Application (mm Btu/hr) | | |
| Maximum Design Heat Input | | Not Specified in Application (mm Btu/hr) | | |
| Projected Operating Schedule | | 16 hours/day; 6 days/week; 52 weeks/yr | | |
| Pollutant | Pollutant | Emission Rate | | |
| | | Uncontrolled (1) | | Not Controlled |
| | | (lb/hr) | (ton/yr)* | |
| | PM | 0.02 | 0.088 | |
| | $SO_2$ | 0.01 | 0.05 | |
| | $NO_x$ | 0.02 | 0.088 | |
| | CO | 0.01 | 0.05 | |
| | VOC | 0.01 | 0.05 | |

* Based on 8,760 hr/yr of operation.
(1) Based on manufacturer stack test data.

| Table 5: 4S - Bayco Bake Oven | |
|---|---|
| Name/Type/Model of Source | Bayco Cure Oven; Model CD-392 G |
| Maximum Process Material Charged per hour | 1,600 lbs/hr |
| Maximum Material Produced per hour | 1,600 lbs/hr |
| Fuel | Natural Gas |
| Btu/hr of Burner | Not Specified in Application (mm Btu/hr) |
| Maximum Design Heat Input | Not Specified in Application (mm Btu/hr) |
| Projected Operating Schedule | 16 hours/day; 6 days/week; 52 weeks/yr |

## Table 5: 4S - Bayco Bake Oven

| | Pollutant | Emission Rate | | |
|---|---|---|---|---|
| | | Uncontrolled (1) | | Not Controlled |
| | | (lb/hr) | (ton/yr)* | |
| Pollutant | PM | 0.135 | 0.6 | |
| | $SO_2$ | 0.008 | 0.035 | |
| | $NO_x$ | 0.200 | 0.88 | |
| | CO | 0.098 | 0.43 | |
| | VOC | 0.034 | 0.15 | |

* Based on 8,760 hr/yr of operation.
(1) Based on manufacturer stack test data.

## Table 6: 5S - Paint Booth

| | |
|---|---|
| Name/Type/Model of Source | Paint Booth |
| Maximum Process Material Charged per hour | 6,000 lbs/hr |
| Maximum Material Produced per hour | 6,000 lbs/hr |
| Projected Operating Schedule | 2 hours/day; 5 days/week; 52 weeks/yr |

| | Pollutant | Emission Rate | | | |
|---|---|---|---|---|---|
| | | Uncontrolled | | Controlled (1) Paint Spray Filter (3C) | |
| | | (lb/hr) | (ton/yr)* | (lb/hr) | (ton/yr) |
| Pollutant | PM | 35.4 | 2.46 | 3.54 | 0.246 |
| | $PM_{10}$ | 16.9 | 1.17 | 1.69 | 0.117 |
| | VOC | 23.9 | 1.47 (2) | Not Controlled | |
| | HAP | 13.3 | 0.50 | | |

* Based on 8,760 hr/yr of operation.
(1) Paint Spray Filter controls PM and PM10 by a factor of 90%.
(2) Based on operating 1,095 hr/yr to allow for growth. (Actual operation estimated to be 520 hr/yr.)

## Table 7: 6S - 6' VPI Tank

| | | | |
|---|---|---|---|
| Name/Type/Model of Source | | 6' Epoxylite VPI Tank | |
| Maximum Process Material Charged per hour | | 6,000 lbs/hr | |
| Maximum Material Produced per hour | | 6,000 lbs/hr | |
| Projected Operating Schedule | | 16 hours/day; 6 days/week; 52 weeks/yr | |
| Description | | An enclosed system containing a storage tank filled with resin, a vacuum pump, and a chiller. This process is used mainly for Vacuum Pressure Impregnation (VPI) in rebuilding electric motors to make them last longer and work more efficiently. Because the system is totally enclosed, potential emissions should be negligible. | |
| Estimated Emissions (No Controls) | VOC | 1.0 lb/hr | 0.482 ton/yr (Based on 8,760 hr/yr of operation.) |

## Table 8: 7S - 4' VPI Tank

| | | | |
|---|---|---|---|
| Name/Type/Model of Source | | 4' Epoxylite VPI Tank | |
| Maximum Process Material Charged per hour | | 6,000 lbs/hr | |
| Maximum Material Produced per hour | | 6,000 lbs/hr | |
| Projected Operating Schedule | | 10 hours/day; 6 days/week; 52 weeks/yr | |
| Estimated Emissions (No Controls) | VOC | 1.0 lb/hr | 0.21 ton/yr* |
| | HAP | 1.0 lb/hr | 0.15 ton/yr* |

* Based on 8,760 hr/yr of operation.

## Table 9: 8S - DIP Tank

| | | | |
|---|---|---|---|
| Name/Type/Model of Source | | Dip Tank | |
| Maximum Process Material Charged per hour | | 6,000 lbs/hr | |
| Maximum Material Produced per hour | | 6,000 lbs/hr | |
| Projected Operating Schedule | | 16 hours/day; 6 days/week; 52 weeks/yr | |
| Estimated Emissions (No Controls) | VOC | 1.0 lb/hr | 0.21 ton/yr* |
| | HAP | 1.0 lb/hr | 0.15 ton/yr* |

* Based on 8,760 hr/yr of operation.

## Table 10: 9S - Parts Cleaner (Using Safety Kleen as a Solvent)

| | | | |
|---|---|---|---|
| Name/Type/Model of Source | | Proceco Typhon Parts Cleaner; MDL - HD60-6065000 - 60-2-R | |
| Maximum Process Material Charged per hour | | 500 lbs/hr | |
| Maximum Material Produced per hour | | 500 lbs/hr | |
| Solvent Used | | Safety Kleen | |
| Projected Operating Schedule | | 16 hours/day; 6 days/week; 52 weeks/yr | |
| Estimated Emissions (No Controls) | VOC | 1.0 lb/hr | 0.71 ton/yr* |
| | HAP | 0.5 lb/hr | 0.007 ton/yr* |

* Based on 8,760 hr/yr of operation.

## Table 11: 10S - Large Abrasive Blasting Room

| | | | | |
|---|---|---|---|---|
| Name/Type/Model of Source | Large Abrasive Blasting Room | | | |
| Maximum Process Material Charged per hour | 10,000 lbs/hr | | | |
| Maximum Material Produced per hour | 10,000 lbs/hr | | | |
| Abrasive Used | Black Beauty | | | |
| Projected Operating Schedule | 16 hours/day; 6 days/week; 52 weeks/yr | | | |
| Pollutant | Emission Rate | | | |
| | Uncontrolled | | Controlled (1) Baghouse (4C) | |
| | (lb/hr) | (ton/yr)* | (lb/hr) | (ton/yr)* |
| PM | 50 | 1.035 | 0.5 | 0.01 |
| $PM_{10}$ | 25 | 0.493 | 0.25 | 0.005 |

* Based on 8,760 hr/yr of operation.
(1) Baghouse controls PM and PM10 by a factor of 99%.

| Table 12: 11S - Small Abrasive Blasting Room | | | | |
|---|---|---|---|---|
| Name/Type/Model of Source | Large Abrasive Blasting Room | | | |
| Maximum Process Material Charged per hour | 6,000 lbs/hr | | | |
| Maximum Material Produced per hour | 6,000 lbs/hr | | | |
| Abrasive Used | Black Beauty | | | |
| Projected Operating Schedule | 16 hours/day; 6 days/week; 52 weeks/yr | | | |
| Pollutant | Emission Rate | | | |
| | Uncontrolled | | Controlled (1) Baghouse (5C) | |
| | (lb/hr) | (ton/yr)* | (lb/hr) | (ton/yr)* |
| PM | 50 | 1.035 | 0.5 | 0.01 |
| $PM_{10}$ | 25 | 0.493 | 0.25 | 0.005 |

* Based on 8,760 hr/yr of operation.
(1) Baghouse controls PM and PM10 by a factor of 99%.

## SITE INSPECTION

Soles was last inspected on October 29, 2013 by Lou Ann Lee, Enforcement Inspector out of the DAQ's North Central Regional Office, Fairmont, WV. The facility was found to be in compliance and was given a Status Code of 30. It was noted at that time that Soles had applied for an air permit.

Directions as given in the permit application (page 2, item 12A):

> Exit 135 off of I-79, go straight through stop onto Tulip Lane. Soles Electric is on the right.

## ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Soles emissions were estimated by Gene Coccari of DAQ's Small Business Group. Gene's calculations are detailed in a letter dated January 10, 2013 to Sole's Safety Director Edward Richards. This letter can be found in Attachment 1 to this evaluation.

Emissions for the facility after controls, as advertised in Sole's April 11, 2014 legal advertisement (Times West Virginian), are given below in Table 13.

| Table 13: Sole's Estimated Emissions After Controls from Their Fairmont, WV Facility. | |
|---|---|
| **Pollutant** | **Controlled Emission** |
| PM | 4[(1)] |
| PM10 | 2 |
| $SO_2$ | 0.2 |
| $NO_x$ | 3 |
| CO | 1 |
| VOC | 6.5 |
| Combined HAPs | 3.5 |
| Xylene | 2.5 |
| * Based on 8,760 hr/yr. | |

**Table 14: Soles' Estimated PM Emissions.**

| Emission Unit ID | Emission Unit Description | Control Device | Emission Rate | |
|---|---|---|---|---|
| | | | (lb/hr) | (ton/yr)* |
| 1S | Steelman Burn Oven | 1C - Afterburner | 0.029 | 0.127 |
| 2S | Bayco Burn Oven | 2C - Afterburner | 0.135 | 0.5913 |
| 3S | Steelman Bake Oven | None | 0.02 | 0.088 |
| 4S | Bayco Bake Oven | None | 0.135 | 0.6 |
| 5S | Paint Booth | 3C - Paint Filter | 3.54 | 0.246 |
| 6S | VPI | None | --- | --- |
| 7S | Dip Tank | None | --- | --- |
| 8S | Dip Tank | None | --- | --- |
| 9S | Parts Cleaner | None | --- | --- |
| 10S | Large Abrasive Blasting | 4C - Baghouse | 0.5 | 0.01 |
| 11S | Small Abrasive Blasting | 5C - Baghouse | 0.5 | 0.01 |
| Total | | | 4.9 | 1.7 |
| * Based on 8,760 hr/yr of operation. | | | | |

## Table 15: Soles' Estimated $SO_2$ Emissions.

| Emission Unit ID | Emission Unit Description | Control Device | Emission Rate | |
|---|---|---|---|---|
| | | | (lb/hr) | (ton/yr)* |
| 1S | Steelman Burn Oven | 1C - Afterburner | 0.014 | 0.061 |
| 2S | Bayco Burn Oven | 2C - Afterburner | 0.008 | 0.0351 |
| 3S | Steelman Bake Oven | None | 0.01 | 0.05 |
| 4S | Bayco Bake Oven | None | 0.008 | 0.0351 |
| 5S | Paint Booth | 3C - Paint Filter | --- | --- |
| 6S | VPI | None | --- | --- |
| 7S | Dip Tank | None | --- | --- |
| 8S | Dip Tank | None | --- | --- |
| 9S | Parts Cleaner | None | --- | --- |
| 10S | Large Abrasive Blasting | 4C - Baghouse | --- | --- |
| 11S | Small Abrasive Blasting | 5C - Baghouse | --- | --- |
| Total | | | 0.04 | 0.2 |

* Based on 8,760 hr/yr of operation.

## Table 16: Soles' Estimated $NO_x$ Emissions.

| Emission Unit ID | Emission Unit Description | Control Device | Emission Rate | |
|---|---|---|---|---|
| | | | (lb/hr) | (ton/yr)* |
| 1S | Steelman Burn Oven | 1C - Afterburner | 0.143 | 0.63 |
| 2S | Bayco Burn Oven | 2C - Afterburner | 0.2 | 0.876 |
| 3S | Steelman Bake Oven | None | 0.02 | 0.088 |
| 4S | Bayco Bake Oven | None | 0.2 | 0.88 |
| 5S | Paint Booth | 3C - Paint Filter | --- | --- |
| 6S | VPI | None | --- | --- |
| 7S | Dip Tank | None | --- | --- |
| 8S | Dip Tank | None | --- | --- |
| 9S | Parts Cleaner | None | --- | --- |
| 10S | Large Abrasive Blasting | 4C - Baghouse | --- | --- |
| 11S | Small Abrasive Blasting | 5C - Baghouse | --- | --- |
| Total | | | 0.56 | 2.48 |

* Based on 8,760 hr/yr of operation.

## Table 17: Soles' Estimated CO Emissions.

| Emission Unit ID | Emission Unit Description | Control Device | Emission Rate | |
|---|---|---|---|---|
| | | | (lb/hr) | (ton/yr)* |
| 1S | Steelman Burn Oven | 1C - Afterburner | 0.014 | 0.061 |
| 2S | Bayco Burn Oven | 2C - Afterburner | 0.098 | 0.43 |
| 3S | Steelman Bake Oven | None | 0.01 | 0.05 |
| 4S | Bayco Bake Oven | None | 0.098 | 0.43 |
| 5S | Paint Booth | 3C - Paint Filter | --- | --- |
| 6S | VPI | None | --- | --- |
| 7S | Dip Tank | None | --- | --- |
| 8S | Dip Tank | None | --- | --- |
| 9S | Parts Cleaner | None | --- | --- |
| 10S | Large Abrasive Blasting | 4C - Baghouse | --- | --- |
| 11S | Small Abrasive Blasting | 5C - Baghouse | --- | --- |
| Total | | | 0.22 | 0.97 |
| * Based on 8,760 hr/yr of operation. | | | | |

## Table 18: Soles' Estimated VOC Emissions.

| Emission Unit ID | Emission Unit Description | Control Device | Emission Rate | |
|---|---|---|---|---|
| | | | (lb/hr) | (ton/yr)* |
| 1S | Steelman Burn Oven | 1C - Afterburner | 0.029 | 0.127 |
| 2S | Bayco Burn Oven | 2C - Afterburner | 0.034 | 0.15 |
| 3S | Steelman Bake Oven | None | 0.01 | 0.05 |
| 4S | Bayco Bake Oven | None | 0.034 | 0.15 |
| 5S | Paint Booth | 3C - Paint Filter | 23.9 | 1.47 (2) |
| 6S | VPI | None | 1.0 | 0.482 |
| 7S | Dip Tank | None | 1.0 | 0.21 |
| 8S | Dip Tank | None | 1.0 | 0.21 |
| 9S | Parts Cleaner | None | 1.0 | 0.71 |
| 10S | Large Abrasive Blasting | 4C - Baghouse | --- | --- |
| 11S | Small Abrasive Blasting | 5C - Baghouse | --- | --- |
| Total | | | 28.01 | 3.6 (1) |

* Based on 8,760 hr/yr of operation.; (1) Cleaning Solvent VOC not included.
(2) Based on operating 1,095 hr/yr (to allow for growth; actual operating 520 hr/yr).

The above VOC emissions (Table 18) do no include the use of 500 gal/yr of cleaning solvents/xylene. The permit limits VOC from cleaning solvents to 15 lb/hr and 1.8 ton/yr. Adding the above VOC emissions (Table 18) to the VOC cleaning solvents results in VOC emission rates of 43 lb/hr and 5.4 ton/yr.

**Table 19: Soles' Estimated HAP Emissions.**

| Emission Unit ID | Emission Unit Description | Control Device | Emission Rate | |
|---|---|---|---|---|
| | | | (lb/hr) | (ton/yr)* |
| 1S | Steelman Burn Oven | 1C - Afterburner | --- | --- |
| 2S | Bayco Burn Oven | 2C - Afterburner | --- | --- |
| 3S | Steelman Bake Oven | None | --- | --- |
| 4S | Bayco Bake Oven | None | --- | --- |
| 5S | Paint Booth | 3C - Paint Filter | 13.3 | 0.50 |
| 6S | VPI | None | --- | --- |
| 7S | Dip Tank | None | 1.0 | 0.15 |
| 8S | Dip Tank | None | 1.0 | 0.15 |
| 9S | Parts Cleaner | None | 0.5 | 0.007 |
| 10S | Large Abrasive Blasting | 4C - Baghouse | --- | --- |
| 11S | Small Abrasive Blasting | 5C - Baghouse | --- | --- |
| Total | | | 15.8 | 0.81 (1) |

(1) Based on 8,760 hr/yr of operation.
* Cleaning Solvent (100% xylene/HAP) not included.

The above HAP emissions (Table 19) do not include the use of 500 gal/yr of cleaning solvents/xylene. The permit limits VOC from cleaning solvents to 15 lb/hr and 1.8 ton/yr. Adding the above HAP emissions (Table 19) to the VOC/HAP cleaning solvents equals results in HAP emission rates of 30.8 lb/hr and 2.6 ton/yr.

## REGULATORY APPLICABILITY

Soles' Fairmont, WV facility is a non-major stationary source, not subject to Title V (45SCR30) because it is not subject to a standard or other requirement under § 112 of the Clean Air Act.

Applicable State Rules:

45CSR6 - **Control of Air Pollution from Combustion of Refuse**

Rule 6 establishes emission standards for particulate matter and requirements for activities involving incineration of refuse which are not subject to, or are exempted from regulation under a federal counterpart for specific combustion sources.

Items (motors) with electrical damage are heated in natural gas-fueled burnout ovens to remove varnish, epoxy, paint, grease, rubber and other combustible materials from metal. A burnout oven has a high-temperature afterburner that breaks down and eliminates any chemical residues or VOC fumes that could be released into the environment.

Sole's Burnout Ovens (1S and 2S) are considered by the DAQ to be incinerators under Rule 6. The particulate emissions data from the oven manufacturers was used to set PM limits in the permit (Sections 5.1.1 and 5.1.2). Note that these limits are stricter than what is required under Section 45CSR§6-4.1. Applicable Sections of 45CSR§6 quoted in the permit are:

45CSR§6-4.1. - Allowable PM from an incinerator [Burnout Ovens 1S and 2S].

Burnout Oven 1S has a maximum loading rate of 3 tons per hour and based on the equation in this section (4.1 of Rule 6) can burn 16.29 lb/hr (3 X 5.43 lb/hr) of PM.

Burnout Oven 2S has a maximum loading rate of 0.8 tons per hour and bas on the equation in this section (4.1 of Rule 6) can burn 4.42 lb/hr (0.8 X 5.43 lb/hr) of PM.

According to stack tests conducted by the burnout oven manufacturers and included in the permit application, the burnout ovens can easily met the PM emission limits calculated above.

45CSR§6-4.3. - Opacity must be less than 20% [Burnout Ovens 1S and 2S].

45CSR§6-4.4. - Allowable opacity during startup & stoking operations, quoted in permit Section 5.1.6; and

45CSR§6-4.6. - No objectionable odors [Burnout Ovens 1S and 2S].

45CSR7 - **To Prevent and Control Particulate Matter Air Pollution from Manufacturing Processes and Associated Operations**

The purpose of Rule 7 is to prevent and control particulate matter air pollution from manufacturing processes and associated operations.

The three natural gas-fired bake/cure ovens (3S, and 4S) which have no afterburners; the paint filter booth (5S); the VPI (6S), the varnish dip tanks (7S and 8S), the parts cleaner (9S) and the two (2) abrasive blast cabinets (10S and 11S) are subject to the emissions standards of 45CSR7.

45CSR§7-3.1. - Opacity must be less than 20% [Bake/Cure Ovens 3S and 4S; Paint Booth (5S); VPI (6S); Varnish Dip Tanks (7S and 8S); Parts Cleaner (9S); and Abrasive Blast Booths (10S and 11S)].

45CSR§7-4.1. - PM limits for source or duplication source operation [Bake/Cure Ovens 3S and 4S].

45CSR§7-5.1. - Must be equipped with control sytem(s) to minimize fugitive PM [Bake/Cure Ovens 3S and 4S; Paint Booth (5S); VPI (6S); Varnish Dip Tanks (7S and 8S); Parts Cleaner (9S); and Abrasive Blast Booths (10S and 11S)].

45CSR§7-8.1. - Director may required PM stack testing [Bake/Cure Ovens 3S and 4S; Paint Booth (5S); VPI (6S); Varnish Dip Tanks (7S and 8S); Parts Cleaner (9S); and Abrasive Blast Booths (10S and 11S)].

45CSR§7-8.2. - Director or his representative may conduct tests to evaluate emissions [Bake/Cure Ovens 3S and 4S; Paint Booth (5S); VPI (6S); Varnish Dip Tanks (7S and 8S); Parts Cleaner (9S); and Abrasive Blast Booths (10S and 11S)].

45CSR§7-9.1. - Continued operation allowances for unavoidable malfunction of equipment [Bake/Cure Ovens 3S and 4S; Paint Booth (5S); VPI (6S); Varnish Dip Tanks (7S and 8S); Parts Cleaner (9S); and Abrasive Blast Booths (10S and 11S)].

45CSR13 - **Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, Permission to Commence Construction, and Procedures for Evaluation**

Soles' Fairmont Facility has the potential to discharge more than six (6) pounds per hour and ton (10) tons per year of PM.

Soles is subject to substantive requirements of emission control rules promulgated by the Secretary:

- The Burnout Ovens (1S and 2S) are considered by the DAQ to be incinerators and as such are subject to Rule 6.

- The three natural gas-fired bake/cure ovens (3S, and 4S) which have no afterburners; the paint filter booth (5S); the VPI (6S), the varnish dip tanks (7S and 8S), the parts cleaner (9S) and the two (2) abrasive blast cabinets (10S and 11S) are subject to the emissions standards of 45CSR7.

## TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

The following MSDSs were submitted in Attachment H to the application. HAPs are listed after name of the MSDS.

1) H1 - BC-346-A, Clear Baking Varnish; Contains Xylene and Ethyl Benzene.
2) H2 - Removed on 4/7/14 - FSC 15504, Grey Base; Contained Manganese Neodecanoate and Xylene, and Ethylbenzene.

   H2 - New/added on 4/7/14 - ALK FD EN MIDTONE BASE; Contains Xylene, Ethyl Benzene, and Toluene.
3) H3 - 94-652, FAST DRY 2500 Safety Yellow; Contains Xylene and Ethyl Benzene.
4) H4 - 94-658, FAST DRY 2500 Safety Red; Contains Xylene and Ethyl Benzene.
5) H5 - 74041, Catalyzed Epoxy Resin/Insulating Varnish

## AIR QUALITY IMPACT ANALYSIS

Soles' Fairmont, WV facility is consider to be an non-major source. No impact analysis study was conducted for the source.

## MONITORING OF OPERATIONS

45SCR§5.2.1.; 45SCR§6.2.1. & 45SCR§7.21.: Requires visible emission checks of Burnout Ovens (1S and 2S), Bake/Cure Ovens (3S and 4S), and Paint Filter Booth (5S) at least once per month.

45SCR§5.4.1. & 45SCR§6.4.1.: Daily records of hours per day Burnout Ovens (1S and 2S) and Bake/Cure Ovens (3S and 4S) were operated and weigh of material charged to each of the ovens are to be kept.

45SCR§5.4.2. & 45SCR§6.4.2. 45SCR§7.4.6.: Monthly opacity reading for Burnout Ovens (1S and 2S), Bake/Cure Ovens (3S and 4S), and Paint Filter Booth (5S) are to be kept.

45SCR§5.5.1. & 45SCR§6.5.1.: Opacity violations are to be reported in writing with 10 days of occurrence.

45SCR§7.1.1. & 45CSR§7.5.1: Permittee is to notify the DAQ in writing within 30 days of using a new surface coating containing a HAP. An MSDS sheet for the surface coating shall be included with the notice to the DAQ.

45CSR§7.4.5.: Paint Booth Operation - On a daily basis, record: 1) number of hours operated; 2) name and id number of each coating applied; 3) amount of each paint and solvent used, and 4) VOC content of each paint and thinner/reducer used.

Daily VOC emissions from the paint booth are to be calculated.

The 12-month rolling VOC emission total for the paint booth is to be calculated.

45CSR§7.4.7.: VPI System and Varnish Dip Tanks - On a daily basis, record: 1) number of hours each system/tank were operated; 2) amount of varnish used and/or added; 3) VOC content of varnish used; and 4) HAP content of varnish used.

45CSR§7.4.8.: Parts Cleaner (9S) - On a daily basis, record: 1) number of hours operated; 2) amount of cleaner solvent added; and 3) the hours the cover was on.

45CSR§7.4.9.: Abrasive Blast Booths (9S) - On a daily basis, record: 1) number of hours each booth was operated; 2) amount of abrasive blast media used and/or added to each booth.

45CSR§7.4.10.: Daily Cleaning Solvent Usage - Facility shall record on a daily basis the amount of cleaning slovent(s) used, the VOC content of the cleaning solvent(s), the daily cleaning solvent emission rate and 12-month rolling VOC cleaning solvent emission rate for the facility.

45CSR§7.5.2.: Permitted to notify DAQ in writing of any new parts solvent cleaner and VOC content of the cleaner with 30 days of use. An MSDS shall be included with the notice to the DAQ.

## RECOMMENDATION TO DIRECTOR

Soles' after-the-fact request for an air permit for the construction and operation of an electric motor repair shop at their Fairmont, Marion County, WV facility meets the requirements of all applicable rules and therefore should be granted said construction permit (R13-3162).

John Legg
Permit Writer

May 19, 2014

**Attachment 1**

Calculations for 45CSR13 Permit Application R13-3162

Soles Enterprises, LLC d.b.a. Soles Electric Company

Compiled and Written by

Gene Coccari, DAQ Small Business Assistance

west virginia department of environmental protection

Division of Air Quality
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Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

January 10, 2013

Mr. Edward Richards
Safety Director
Soles Electric Company, Inc.
1552 Tulip Lane
Fairmont, WV 26554

RE: Calculations for 45CSR13 Permit Application

Dear Mr. Richards:

I appreciated the opportunity to visit the Soles Electric Company, Inc. (Soles Electric) facility recently. As you are aware, Soles Electric was referred to the Division of Air Quality's (DAQ) Small Business Assistance Program (SBAP) by Inspector Lou Ann Lee of DAQ Enforcement. Although in the past it was determined that Soles Electric may not have needed a construction permit pursuant to 45CSR13, DAQ Enforcement is now requiring electric motor recycling facilities to obtain a construction permit pursuant to requirements outlined in 45CSR6, as the burnout ovens meet the definition of an incinerator. These and all air quality rules can be viewed via the Internet by visiting the DEP website at www.wvdep.org/daq and clicking the specific rule number at "Summary of Rules" under the "Regulations" heading at the right hand side of the page. Below, please find a breakdown of the potential emissions for each of the pertinent processes at the Soles Electric facility quantified.

**BURNOUT OVENS**

Currently Soles Electric employs the use of a two (2) different burnout ovens as follows:

- A Steelman Burnout Oven fired by natural gas (8'x8'x8')
- A Bayco Burnout Oven fired by natural gas (5'x6'x6')

The Steelman Burnout Oven has a total heat input of 1.255 MMBtu/hr, including the primary chamber and the afterburner. According to information supplied by Steelman Industries, Inc., the results from a scaled stack test (attached) show the following hourly emissions, with the figures below provided in Pounds Per Hour (PPH), Pounds Per Year (PPY), derived by multiplying PPH by 8,760 hrs/yr, and Tons Per Year (TPY), derived by dividing PPY by 2,000 lb/ton:

| | PPH | PPY | TPY |
|---|---|---|---|
| Particulate Matter (PM 30) | 0.029 | 254.04 | 0.127 |
| Sulfur Dioxide (SO2) | 0.014 | 122.64 | 0.06132 |
| Nitrogen Oxides (NOx) | 0.143 | 1252.7 | 0.63 |
| Carbon Monoxide (CO) | 0.014 | 122.64 | 0.06132 |
| Hydrocarbons (HC)* | 0.029 | 254.04 | 0.127 |

The Bayco Burnout Oven is a smaller model, Model BB-180, the emissions of which are provided based on information provided by the oven's manufacturer, Bayco Industries of California. These emissions are listed below by pollutant:

| | PPH | PPY | TPY |
|---|---|---|---|
| Particulate Matter (PM 30) | 0.135 | 1182.6 | 0.5913 |
| Sulfur Dioxide (SO2) | 0.008 | 70.08 | 0.03504 |
| Nitrogen Oxides (NOx) | 0.200 | 1752.00 | 0.876 |
| Carbon Monoxide (CO) | 0.098 | 858.48 | 0.4293 |
| Hydrocarbons (HC)* | 0.034 | 297.84 | 0.14892 |

**BAKE OVENS**

Currently Soles Electric employs the use of a two (2) different bake ovens as follows:

- A Steelman Cure Oven fired by natural gas (Model 568-GTC)
- A Bayco Cure Oven fired by natural gas (Model CD-392G)

Emissions for Steelman Bake Oven are as follows (see attached information from Steelman for larger 888-GTC oven):

| | PPH | PPY | TPY |
|---|---|---|---|
| Particulate Matter (PM 30) | 0.02 | 175.2 | 0.0876 |
| Sulfur Dioxide (SO2) | 0.01 | 87.6 | 0.05 |
| Nitrogen Oxides (NOx) | 0.02 | 175.2 | 0.0876 |
| Carbon Monoxide (CO) | 0.01 | 87.6 | 0.05 |
| Hydrocarbons (HC)* | 0.01 | 87.6 | 0.05 |

Emissions for the Bayco Bake Oven, Model CD-392G, are shown below (see attached information from Bayco Industries of California, as no bake oven emissions are available, emissions are based on large burn-out oven, BB-180 - which is also 6' x 6'):

*HC (Hydrocarbons) are a surrogate for VOCs

| | PPH | PPY | TPY |
|---|---|---|---|
| Particulate Matter (PM 30) | 0.135 | 1182.6 | 0.5913 |
| Sulfur Dioxide (SO2) | 0.008 | 70.1 | 0.035 |
| Nitrogen Oxides (NOx) | 0.200 | 1752.0 | 0.876 |
| Carbon Monoxide (CO) | 0.098 | 858.5 | 0.43 |
| Hydrocarbons (HC)* | 0.034 | 297.8 | 0.15 |

**PAINT BOOTH**

The SBAP was provided requested information from Soles Electric, including the amount of coatings, thinners, primers, etc. utilized in the largest 12 month period of use, as well as MSDS for each of the coatings, etc. currently in use. For the 520 hours that coating is typically conducted per year during the facility's 4,160 hours working hours, the actual emissions were calculated (see attached spreadsheet). Then from this baseline, potential emissions were calculated, to determine the facility's potential to emit (PTE), which is what the facility is capable of emitting if in operation 8,760 hrs/yr. In the case of Soles Electric, PTE figures were calculated by dividing the actual yearly emissions in tons per year by the actual hours per year spent coating. This hourly emission rate then reflects actual average hourly emissions, and this figure is only pertinent for the yearly emission calculations. It should be noted, however, when listing the actual real hourly emissions in the air quality application, a spike of the most coating that could be sprayed in an hour should be reported instead of an average derived from the yearly numbers.

The average actual hourly emissions in pounds per hour are then multiplied by a potential yearly coating multiplier that is derived as follows:

| | | | | |
|---|---|---|---|---|
| Hrs/yr actual coating | 520 | X | Potential hrs/yr coating | |
| Hrs/yr total operations | 4,160 | = | 8,760 | Total hours in year |

This cross-multiplication yields a figure of 1,095 hrs/yr that coating could take place in the overall operation. The average actual hourly emissions multiplied by the 1,095 hrs/yr PTE multiplier yields the potential emission totals (shown on the spreadsheet labeled "Maximum Emissions Estimate" at the top). The "Maximum Emissions Estimate" spreadsheet's emissions are the ones used in the application to allow for a emission cushion for growth. It should also be noted that controlled PM emissions can be calculated using the standard 90% control efficiency for paint filters (i.e. 10% of the overspray of uncontrolled PM emissions on the spreadsheet would then be emitted to the ambient air). The paint booth emissions for this facility were calculated via "Maximum Emissions Estimate" spreadsheet (attached). They are as follows:

| **Pollutant** | **Emissions (PPH)** | **Emissions (TPY)** |
|---|---|---|
| Total VOCs | 23.9 | **1.47** |
| Total PM30 | 35.4 | **2.46** |
| Total PM10 | 16.9 | **1.17** |
| Total HAPs | 13.3 | **0.50** |

PM10 amounts are derived by dividing PM30 amounts by 2.1 as per EPA's AP-42 a "Compilation of Air Pollutant Emission Factors," and can be used as a surrogate for PM2.5 figures as well, as coating operations rarely results in fine PM less than 10 microns in diameter. The hourly amounts were derived by taking the largest coating for each pollutant multiplied by 5 gal/hr. (Midtone Base Machine Gray for VOCs and HAPs, Gloss Oil White for PM).

**MISC. VOCs - VPI, DIP TANKS** and **PARTS CLEANER**

The epoxy tank is an enclosed system that also contains a storage tank filled with resin, a vacuum pump, and a 'chiller'. This process is used mainly for Vacuum Pressure Impregnation (VPI) in the rebuilding of the electric motors in order to make them last longer and work more efficiently. As this system is totally enclosed, potential emissions should be negligible. However, since some of these VOC emissions would be related to the bake and burn-off ovens, they are quantified here based on usage. The same applies for the three dip tanks. The Parts Cleaner at Soles Electric uses Safety Kleen solvent. Emissions are as follows (also on attached spreadsheet marked SOLVENTS):

| | |
|---|---|
| VPI | 963.6 lbs/VOCs per year (0.482 TPY) |
| Dip Tank | 824.62 lbs/VOCs per year (0.4123 TPY) |
| Parts Cleaner | 1,411 lbs/VOCs per year (0.706 TPY) |

**ABRASIVE BLASTING**

According to Soles Electric, it can use 24,000 lbs of black beauty in two abrasive blasting booths a year. Emission factors for this process are obtained from AP-42, a "Compilation of Air Pollutant Emission Factors," 5th edition. Chapter 13.2.6 deals with "Abrasive Blasting," and Table 13.2.6-1 in this chapter lists an emission factor for *abrasive blasting of unspecified metal parts, controlled with a fabric filter* equal to 0.69 lbs. of total PM for every 1,000 lbs of abrasive used. Controlled emissions would be derived as follows (increasing to 30,000 lbs/yr for growth):

30,000 lbs of abrasive used ÷ 1000 lbs abrasive = 30 * 0.69 lbs PM = 20.7 lbs PM (controlled)

Uncontrolled emissions would be derived by back-calculating the controlled emissions taking into account the control efficiency of the baghouse, which are typically 99% efficient. If 20.7 lbs PM (controlled) represents 1% of the emissions, multiplying this number by 100 should represent uncontrolled emissions, or 2,070 lbs/yr (1.035 TPY). This amount can be used for both of the abrasive blast booths. PM10 yearly amounts would be 9.9 lbs PM10 (controlled) or 0.005 TPY PM10 (controlled) and 985.72 lbs/yr or 0.493 TPY PM10 (uncontrolled), respectively.

**NEW FEDERAL AREA SOURCE RULES**

Also, as we discussed, Soles Electric is subject to one of two new federal rules that deal with area, or smaller sources, the first being the "National Emission Standards for Hazardous Air Pollutants (NESHAP): Area Source Standards for Nine Metal Fabrication and Finishing Source

Categories" (Subpart XXXXXX) rule. After discussions with Soles Electric , given their NAICs Code, it is thought that the facility is not subject to Subpart 6X. That means that they could potentially be subject to the provisions of the "NESHAP: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources" (Subpart HHHHHH) rule.

To ensure that the Soles Electric facility will NOT be subject to the provisions of Subpart HHHHHH - you must ensure that no coating used at the facility contains the following HAPs: **Nickel, Manganese, Cadmium, Chromium, and Lead compounds**. Miscellaneous metal parts coaters that "perform spray application of coatings that contain the target HAP [listed above], as defined in Section 63.11180, to a plastic and/or metal substrate on a part or product," are subject to this subpart. For those miscellaneous metal parts coating facilities that don't spray the target HAP, there is an automatic exemption. Inclusion under this subpart would require stricter control devices, at a minimum. As the SBAP reviewed the coatings MSDS at the facility in performing the emissions calculations, it was found that at this time Soles Electric has no target HAPs in it's coatings. Soles Electric needs to review all new coatings used to ensure that this remains true.

**UTM and LONG/LAT COORDINATES**

Other items needed to complete the application are the UTM Coordinates for the proposed facility, and as facilities are now also required to list the Latitude and Longitude in the Legal Advertisement, the UTM Coordinates and the corresponding Latitude and Longitude are supplied below as follows:

| | | | |
|---|---|---|---|
| UTM | Easting: 574.095 km | Northing: 4367.292 km | Zone: 17 |
| | Latitude: 39.34° | Longitude : -80.138817° | |

In conclusion, if Soles Electric has any additional questions regarding this correspondence do not hesitate to contact me at (304) 926-0499, ext. 1245. If any of the representations I have made in the statements listed above are inaccurate, please contact me immediately. Thank you.

Sincerely,

Gene M. Coccari
Environmental Resource Analyst
Small Business Assistance Program

*Attachments enclosed*