BAGHOUSE and TORIT

STANDARD OPERATING PROCEDURES (SOP)

And

INSPECTION/MAINTENANCE PROCEDURES MANUAL

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INTRODUCTION

EnviroFocus Technologies, LLC (EFT), formerly Gulf Coast Recycling, Inc. (GCR), is a secondary lead smelter. The facility processes spent lead acid batteries and operates under a Title V air permit. Battery components are separated and the lead bearing materials are smelted in a blast furnace rendering a product known as blast lead. The blast lead is further refined to produce specific grades of lead for the manufacture of new batteries, ammunition, and other uses.

EFT is committed to the operation of its facility in a manner that will comply with applicable federal, state, and county environmental regulations and in harmony with the surrounding community. GCR operated at its present location for more than forty (40) years and EFT expects to continue operation well into this century. Regulatory compliance is a corporate commitment. This commitment is vigorously reinforced throughout the company, from the top down.

PURPOSE

The purpose of this plan is to describe the standard operating procedures (SOP) for the emission control (baghouses) systems at EFT as required by U.S. Environmental Protection Agency (EPA), the Florida Department of Environmental Protection (FDEP), and the Environmental Protection Commission of Hillsborough County (EPC) . The baghouse SOP has been developed to provide the minimum guidelines needed for inspections and routine maintenance of the baghouses to ensure proper baghouse operations with sufficient control efficiency.

APPLICABLE STANDARDS

The EPA's National Emission Standards for Hazardous Air Pollutants (NESHAP) from Secondary Lead Smelting (40 CFR 63 Subpart X) apply to this facility. This rule requires the owner to prepare and operate in accordance with a standard operating procedures (SOP) manual that describes the operation and maintenance procedures for baghouses in operation at the facility.

EFT must also comply with the NAAQS (National Ambient Air Quality Standards) for all criteria pollutants - Carbon Monoxide (CO), Pb, Nitrogen Dioxide (NO2) Ozone (O3) PM, Sulfur Dioxide (SO2). EPA has established both primary and secondary standards for the criteria pollutants to protect the public and environment. The primary criteria pollutants of concern at EFT are Pb and PM which are emitted in the blast furnace, tapping and charging, and refining process areas and from roadways. To remain below the NAAQS for Pb and PM, EFT must ensure the baghouses are properly operating according to the SOP and the building is under negative pressure to prevent fugitive lead from escaping to the atmosphere. Roadway fugitives are also kept to a minimum on the ground through implementation of the fugitive SOP (address as a separate plan).
In addition, EFT is subject to the New Source Performance Standards (NSPS) for Secondary Lead Smelters (40 CFR 60 Subpart L) and the Reasonable Achievable Control Technology (RACT) for Pb and PM (Rules 62-296.603 and .712, F.A.C.).

OVERVIEW OF BAGHOUSE OPERATING SYSTEMS

PM and Pb process emissions from the Blast Furnace, Tapping and Charging , and Refining Kettles are captured by hoods or enclosure hoods and vented to compartmentalized, shaker style baghouses equipped with a Filter Sense, or equivalent, particulate monitoring systems to detect bag failures. In the Blast Furnace building and containment room, lead ladened air is pulled throughout the room under negative pressure and routed through ducts into a cartridge baghouse known as a Torit, which is also equipped with a Filter Sense, or equivalent, particulate monitoring system.

There are ten (10) compartments on the Blast Furnace process baghouse; three (3) compartments on the Tapping/Charging baghouse (also known as the Blast Furnace hygiene baghouse); and three (3) compartments on the Refining Operation baghouse for a total of sixteen (16) compartments. The ten (10) compartments on the Blast Furnace process baghouse are equipped with automatic timers to actuate the shaker mechanisms. These baghouses have transmitter-type, differential pressure, and paperless recorders that continuously record the data on an electronic data logger with disk drive. The data saved on the disk drive is used to produce a permanent electronic and hard copy record of the baghouse differential pressure readings relative to date(s) and time(s).

The Torit baghouse consists of 3 compartments composed of 48 pleated filters each, a fan and 200-hp motor. The fan is started by a selector (hand/off/auto) on the control panel which ensures the disconnect switch is in the ON position. The computer in the AC controller regulates the startup of the Torit bank fan. Cartridge filter material is an Ultra-Web material with a rated efficiency of 99.7% on particles down that are 3 microns in size. A Filter Sense, or equivalent, particulate dust sensor probe monitors dust in the duct between the filter house and the fan. The dust collected by these cartridges are removed periodically using short compressed air blasts and collected by augers under the Torit hopper which feed into a drum fed by a rotary airlock. These collection augers are controlled by the selector switch (hand/off/ auto) located on the wall of the control panel. When the drum is full it is transferred to the containment room and is recycled with the blast furnace feed material.

An Allen Bradley PLC monitors the Torit static pressure in each bank of cartridges and the pulse cycle automatically. When the pressure reaches a set point, the computer will then start the pulse cycle which cleans the cartridges with compressed air pulses. The dust collector section has a series of cartridges inserted into the side of it (two per opening). These cartridges are the filters for the incoming air. As the cartridges start to blind up with dust, the static pressure builds within the filter house. When the static pressure reaches a certain point, the computer will initiate a pulse cycle. During each cleaning event the compartment is taken off-line and the pressure drop reading essentially goes to zero (null). The zero reading and the resulting decrease in pressure drop after each off-line cycle/cleaning event is indicated by the graphic display. The monitor continuously display an approximately one (1) hour block of real-time data for each compartment.

Each Torit pulse cycle consists of the computer opening a pop-it valve on each air line. It will do this one at a time. A pulse lasts only for a brief millisecond and then the pop-it valve is closed again. Each pulse hits 2 cartridges with a blast of air forcing any built up dust on the cartridge to

blow off. Once a pulse cycle has been initiated it will continue until all of the cartridges within that unit have been pulsed. If, after a pulse cycle, the static pressure has not dropped below the lower set point, the computer will again initiate a pulse cycle. The computer will run approximately 8 continuous pulse cycles to try and reach the lower set point. At that point, if the current static pressure set point has not been reached, the computer will automatically adjust the set point up. If by this process the set point reaches a high level set point, the computer will display an alarm message stating which Torit bank needs attention.

Bag failure is indicated by a drastic and sustained increase in the relative dust-loading readout scale and this will trigger a visual and audible alarm. Each monitoring system consists of an in-stack Teflon coated stainless steel sensing probe, an active sensor head, and a controller with display scale. The output from each monitoring system is sent to an electronic six-channel data logger with hard drive and disk recording capabilities. There are two (2) four-point annunciations to provide visual and audible alarm displays when a monitor detects an alarm condition.

Sensing probe length and stack diameters are as follows:

Source	Stack Diameter	Probe Length
Blast Furnace Operation	36" -base / 24" -top	20"
Tapping/ Charging	36"	15"
Refining	36"	15"
TORIT	96”	36”

Once the visual alarm is activated on the well house, the following alarms will be displayed on the Wonderware computer software system:

- Baghouse Dust Leak Alarm!!!
- Torit Dust Leak Alarm!!!
- "Filter Mag at Max Upper Limit"

NOTE: Messages with the word "Filter" in it refers to the Torit cartridge collection banks. Messages with the word "Baghouse" in it refers to the furnace, tapping/charging (hygiene), and refinery baghouses.

The "Leak Detected" alarms are self-explanatory. Report these alarms and assure the baghouses or Torit banks are inspected to determine where the leak may be and corrected.

The "Mag at Max Upper Limit" alarms refer to the fact that the static pressure within the filter house is not dropping down after a pulse cycle. This again must be reported to Maintenance.

INSPECTIONS

To ensure that baghouse equipment functions as designed and that the outlet emissions limits specified in the operating permit are not exceeded, EFT will do daily, weekly, monthly, semi-annual, and annual equipment inspections as described below. All inspections are documented

using the baghouse SOP inspection checklists (see supporting documentation) and maintained on site for a minimum of 5 years.

Daily

- Blast, Hygiene and Refining baghouses
    - During each day of process operation, the readings from the direct reading indicators, including the pressure differential gauges, will be documented on the daily process form for the Blast Furnace and Refining. Copies of the forms are in the supporting documents.
    - A furnace supervisor, foreman, operator, or leadman will check the pressure drop display screens (monitors) for a displayed null reading, indicating that a cleaning cycle has occurred on the blast furnace baghouses.
    - The supervisor, foreman, operator, or leadman in all areas will inspect the operating condition of the stack(s), air compressor, and the vibrators (where applicable). The inlet temperature of the blast furnace baghouse will also be checked and recorded.
    - Baghouse belts, cleaning shaker, bearings, screws, tubes to magnahelix and hopper vibrators, cleaning under baghouses and the condition of stack fans will be inspected daily by the supervisor, foreman, operator, or leadman in all areas.
- Torit
    - Operators ensure the fan is reopened and in the HAND position for start up and normal running.
    - Operators confirm the GREEN RUN indicator light is illuminated on the AC controller and the damper is open after start up.
    - Operators confirm the collection auger is left in the AUTO position.
    - During each day of process operation, the readings from the direct reading indicators, including the pressure differential gauges, will be documented on the daily process form for the Torit. Copies of the forms are in the supporting documents.
    - Operators check compressed air supply for cleaning mechanism.
- Blast Furnace
    - The furnace banjo hood, banjo ductwork, well hood, well ductwork, slag tapping enclosure, slag tapping ductwork will be checked .
- Refining Kettles
    - Kettle hoods are inspected to ensure they are operating correctly,
- Sodium Bicarbonate Injection System
    - Feeder gear box, blower, and feeder auger are inspected to ensure they are in working order.
- Miscellaneous Sources
    - Visible Emission (VE) checks are done on the containment room, process (blast) stack, hygiene stack, refinery stack, Torit stack, refinery star 1, refinery star 2, refinery pot 1, refinery pot 2, refinery pot 3, and refinery pot 4.

Weekly

- Blast, Hygiene and Refining baghouses
    - A supervisor, foreman, operator or leadman will inspect the baghouse hoppers, vibrators, and the screw conveyors to insure that the dust is being removed from the hoppers.

- Torit
    - The baghouse magnahelic will be checked to ensure proper operations, no air leaks are present, bearings greased and checked, damper plate and probe in good condition
    - Operator will verify the function of the pulse jet mechanisms, which can also be evidenced by observation of the pressure drop monitors.
    - A supervisor, foreman, operator or leadman will inspect the baghouse hoppers, vibrators, and the screw conveyors to insure that the dust is being removed from the hoppers.

Monthly

- Blast, Hygiene and Refining baghouses
    - The supervisor, foreman, operator, or leadman will inspect the pressure drop readings from the baghouse over a period of two three days to ensure it has decreased after the baghouse compartment is shaken.
    - Bag tension will also be inspected to insure the bag is properly crimped not allowing dust to fall out of the bag or causing high pressure readings.
    - The damper, mac valve, rotary locks, and bag cleaning mechanisms will be inspected to ensure proper operations.
- Sodium Bicarbonate Injection System
    - The feeder gear and blower gear boxes, blower belt, and feeder bearings are inspected to ensure they are in working properly.

Quarterly

- Blast, Hygiene and Refining baghouses
    - The interior of each baghouse will be inspected for corrosion, bag integrity, and air leaks.
    - The fans/housing will be visually inspected for wear, material buildup, and corrosion from the blast furnace.
    - The operating condition of the fan will be checked visually or by using a vibration detector (or equivalent) method, for build-up and wear.
    - The exterior of each baghouse will be inspected to include the shaker bars and bag hanger condition, cell plate for wear and corrosion, damper for condition and corrosion.
- Torit
    - The interior of the baghouse will be inspected for corrosion, bag integrity, and air leaks.

- The fan/housing will be visually inspected for wear, material buildup, and corrosion.

MAINTENANCE

In addition to regular inspections, EFT will conduct routine maintenance to ensure proper baghouse operations. EFT's maintenance schedule is as follows:

Daily

- Blast, Hygiene and Refining baghouses
  - Maintain in an air-tight and water-tight condition on the baghouses, and paint periodically to prevent corrosion.
  - Access and inspection doors must be kept tightly closed except when unit is shut down. Threaded bolts and clamps must be lubricated to prevent corrosion. Door seals and gaskets should be maintained in good condition.
  - The automatic dampers should provide clean air at a minimum of 80psi, and clean or replace sluggish solenoid valves. Protect damper valve linkage from corrosion.
- Torit
  - Ensure Wonderware computer program records on a daily and event basis, the operation of the Torit Particulate Monitoring System to include the dust probe readings, pressure differences in the cartridges, auger conditions, cleaning events, alarm events, and periods of maintenance.

Weekly

- Torit
  - Empty dust barrel

Monthly

- Blast, Hygiene and Refining baghouses
  - Lubricate the shaker mechanism bearings, shaker bar, and clevis pins monthly.
  - Lubricate fan bearings and motor bearings (where applicable) at least monthly.
- Torit
  - Ensure Wonderware computer program records on a daily and event basis, the operation of the Torit Particulate Monitoring System to include the dust probe readings, pressure differences in the cartridges, auger conditions, cleaning events, alarm events, and periods of maintenance.

Every nine (9) to twelve (12) months

- Blast, Hygiene and Refining baghouses
  - If acrylic bags are used, replace as often as every nine (9) to twelve (12) months as needed.
- Torit

- At least once a year, visualite checks should be performed. This involves inserting visualite into a bank while running and then shutting the bank off and going inside the clean air plenum with a black light to search for leakage problems.

Every twenty-four (24) and forty-eight (48) months

- Blast, Hygiene and Refining baghouses
  - If membrane technology bags (Teflon on acrylic) are used, replace them every twenty-four (24) and forty-eight (48) months on the Blast furnace baghouse as needed. They may last longer on the Tapping/Charging and the Refining baghouses.

Every three to five years

- Torit
  - Cartridge replacement is usually done on an entire bank at one time. The cartridges would normally be replaced after three - five years. Visualite testing may require a few cartridges to be changed periodically. Due to the high potential for fugitives during cartridge replacement, a work procedure has been developed and should be reviewed thoroughly by all personnel involved in the change out prior to the start of work.

The Donaldson Manual should be consulted for more detailed maintenance efforts such as troubleshooting.

CORRECTIVE MEASURES

A leak detection system has been installed to monitor the point source discharge for each emission control system. Each point source consists of a Filter Sense particulate monitoring system, or equivalent bag leak detection system sufficient to meet the requirements of 40 CFR 63.548. Each leak detection system is interfaced with a visual and an audible alarm that activates when the alarm relay is tripped for more than twelve (12) seconds. The data from each system is recorded by a Monarch Data Chart 3000 data acquisition system w/disk drive, or equivalent data collection system sufficient to meet the requirements of 40 CFR 63.548. Data recorded on the disk drive is used to produce hard copy charts, which detail continuous sensor output with relative date(s) and time(s).

The following corrective action plan meets the requirements of 40 CFR 63.548(f).

- Should the leak detection system for a point source indicate an alarm, the individual compartment will be identified and an investigation to determine the cause of the alarm will be initiated within 30 minutes of the alarm.
- The compartment will first be isolated. The compartment will then be entered to pinpoint (air leaks, torn or broken filter elements, or any other malfunction that may cause an increase in emissions) the cause of the alarm.

- Typically, the bottom entry-type bags used by EFT will leave a noticeable accumulation of dust adjacent to the damaged bags.
- If the bags are not identified by this method, the compartment will be closed, brought back on-line and a trace dye will be introduced into the unit.
- The compartment will then be taken off-line, re-entered and inspected with a black light to identify the damaged bags. The damaged bags will be replaced or blanked off and the compartment will be sealed. The compartment will then be brought back on line and the monitor read out will be observed to verify the elimination of the alarm condition.
- If a broken bag/leak indication is still present, the procedure will be repeated until a normal percent of scale read out is observed.
- If a broken bag/leak indication still remains, the bag leak detection system will be inspected and the probe cleaned to ensure proper operation of detection system.
- If the alarm condition cannot be cleared, the process producing the particulate emissions will be shutdown.
- The date and time of the alarm event, and the measures taken to correct the alarm condition, will be documented on the Leak Detection form included in the supporting documents.

QUALITIY ASSURANCE-BAG LEAK DETECTION SYSTEM

- Monitor Set Up
  - With the point source in operation, baghouses in good condition and the pressure normal, the display will be set to read out approximately 10-25 % of scale using the course sensitivity switch when possible.
  - The delay time will be set at twelve (12) seconds.
  - The peak/average switch will be set to peak in the peak position to minimize spikes and false alarms. These adjustments may vary according to the characteristics of each point source.
  - Each point will have an alarm set point approximately equal to twice the cleaning cycle peak or 70% of scale.
- Ongoing QA
  - The Filter Sense system automatically checks the following on an hourly basis:
    - Control Unit Hardware
    - Control Unit Calibration (Zero and Span)
    - Sensor Cable Integrity
    - Sensor Probe Operation
  - Any problems identified by the automatic checks are noted by the system and displayed for operator response.
  - Sensing Probe: During normal operation, the detection probes will be cleaned at least annually. During initial installation or following probe replacement, the probes and insulator will initially be checked and cleaned quarterly.

- Response Test: If the detection system is not fitted with the automatic hourly self checking system as noted above, then a response check will be performed at least annually in accordance with the manufacturer's procedure.
- Drift Check: An electronic drift check will be performed at least annually, or whenever the sensing head is replaced.

SUPPORTING DOCUMENTS FOR BAGHOUSES AND TORIT PARTICULATE COLLECTION SYSTEM

1. Refining Daily Environmental Inspection (A07f)
2. EFT Daily Environmental Baghouse Inspection
3. Daily Refining Baghouse & Equipment Inspections
4. Daily EFT Supervisor Checklist
5. EFT Maintenance Dept. Daily Furnace Baghouse Inspections
6. Weekly Environmental Baghouse Inspection
7. EFT Monthly Environmental Baghouse Inspection
8. EFT Quarterly Environmental Baghouse Inspection
9. Magnahelic Accuracy Inspection (A05f)