MetalTechnologies™

Three Rivers Gray Iron

Air Pollution Control Plan

Consisting of:

- Capture System, Baghouse Leak Detection System, & Control Device System Operation & Maintenance (O & M) Plan
- Preventive Maintenance Plan (PMP)
- Scrap Certification & Selection Plan
- Startup Shutdown & Malfunction Abatement (SSM) Plan
- Compliance Assurance Monitoring (CAM) Plan

Revised: November 2017

REVISION RECORD

DATE	MODIFICATION	NAME
5/2014	Added Rev. Record, TOC, format, scrap selection details, TEA exemption	Dan Plant
7/2014	South Fuller (aka South Sly) Pressure Drop Range Change	Dan Plant
5/2015	2014 North Dustar Add'n	Dan Plant
1/2015	Updated pressure ranges	Dan Plant
8/2016	Misc MACT & CAM Updates	Dan Plant
11/2017	New BBD Requirements	Dan Plant

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Purpose

These plans document certain responsibilities and procedures for the operation, maintenance and monitoring of air emission control equipment, and are consistent with malfunction planning requirements and the MACT Standard for Iron and Steel Foundries (40 CFR 63, subs. EEEEE) and Compliance Assurance Monitoring (40 CFR 64). This document is arranged in two sections, one for MACT compliance and one for CAM compliance. At a minimum, the Plant Manager and Maintenance Manager at the facility must be familiar with this document and its requirements.

Section 1: National Emission Standards for Hazardous Air Pollutants for Iron and Steel Foundries (40 CFR 63 EEEEE)

**Section 1 only pertains to the preheater, furnaces, cold-box core machines, or their associated pollution control equipment unless otherwise noted.*

Per the EPA, National Emission Standards for Hazardous Air Pollutants (NESHAPs) are stationary source standards for hazardous air pollutants. Hazardous air pollutants (HAPs) are those pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects. TRG is regulated as a major source of HAPs under 40 CFR 63 EEEEE, referred to as "MACT Standards". MACT is an acronym for Maximum Achievable Control Technology, which refers to the work practices, maintenance requirements, and/or technology requirements to achieve a maximum reduction in HAPs. At TRG, the areas regulated by MACT are the preheater, furnaces, and cold-box core machine, as well as their pollution control equipment (baghouses and acid scrubbers). MACT also sets the maximum opacity allowed from any opening of the foundry to less than 20%.

MACT requires documentation to show adherence to the standards that are relevant to each facility, which is the purpose of this section of the Air Pollution Control Plan.

TRG must operate at all times according to this plan for MACT-affected emission units and pollution control equipment. Any malfunctions related to MACT-affected emission units or pollution control equipment must be corrected as soon as practicable after their occurrence.

Operation and Maintenance Requirements (40 CFR 63.7710)

Capture System Operation and Maintenance

The following inspections are made of the subject capture systems (hoods, ductwork, etc.):

- PM schedule that is consistent with the manufacturer's instructions for routine and long-term maintenance.
- Monthly PM inspection of equipment important to the performance of the capture system. This inspection must include observations of the physical appearance of the equipment (e.g. presence of holes in ductwork, damper operation, etc.)
    i. TRG is required to repair any noted defects or deficiencies as soon as practicable

Control Device Operation and Maintenance

1. The following inspections are made of the control device (baghouse):

    - Monitoring the pressure drop to ensure it is within the range specified. Measured daily and recorded on PM sheet.
    - Monthly checks of the bag cleaning mechanisms for proper functioning through visual inspection or equivalent.
    - Monthly visual checks of bag tension if a spring-loaded self-tensioning device is not used.
    - Quarterly visual inspections of the baghouse interior for air leaks. Conducted using visolite dust and blacklight. Findings recorded on PM sheet. (required quarterly, but conducted monthly)
    - Quarterly monitoring of the fan for wear, material buildup, and corrosion through visual inspections, vibration detectors, or equivalent. (required quarterly, but conducted monthly)

2. The sand molds at MTI facilities automatically ignite, meaning that the mold vents ignite more than 75% of the time without the presence of an auxiliary ignition source. The vents ignite within 5 minutes of pouring and flame remains for at least 15 seconds. This determination applies to all sand-to-metal ratios and binder formulations at MTI facilities that use vertically parted molding.

3. MTI facilities with core machines only utilize DMIPA as a catalyzing agent, therefore are not subject to the O&M requirements regarding TEA in 63.7710.

    - If TRG plans on using TEA as a catalyst, additional safeguards and requirements must be implemented. Contact Corporate Environmental **PRIOR** to the use of TEA.

Site-Specific Bag Leak Detection System Monitoring and Operating Plan

In 2017, the bag leak detection system (also known as the broken bag detector or "BBD") is being replaced due to the obsolescence of the existing BBDs. The new BBDs use a technology that does not require all of the QA procedures that are listed in the EPA BBD Guidance Document, therefore they are not completed. For example, drift checks and electronics zero checks are not needed per manufacturer's guidance due to the digital nature of the units. The manufacturer's guidance is included in Appendix A, and is utilized in addition to the operating manual provided by the manufacturer.

References:

1. *Auburn Systems, LLC, Instruction Manual, TRIBOdsp U3400, version 3.4, 2015.*
2. *Auburn Systems, LLC, "Recommended Maintenance Plan for model U3400 or U3600", May 2017. Included as Appendix B.*
3. *Auburn Systems, LLC, 3000 Series Compliance Statement, August 2010.*
4. *Auburn Systems, LLC, Certificate of Compliance*
5. *Fabric Filter Bag Leak Detection Guidance, EPA-454/R-98-015, September 1997.*

Installation:

The bag leak detection system is installed according to the procedures outlined in the Auburn Systems, LLC Instruction Manual. Auburn Systems, LLC may be contacted at 800.255.5008 for further information. The installation and setup procedures are included in Chapter 2 of the Instruction Manual.

Initial and Periodic Adjustment and Maintenance:

The initial adjustment procedure is described in the reference documents as well. The sensitivity baseline, under normal conditions, should be set to less than 10%. Sensitivity is best set so a typical cleaning peak reaches around 30%, leaving plenty of room for a broken bag alarm.

The U3400 BBDs do not include the capability of adjusting the response time, therefore the readings that are seen are instantaneous as opposed to averages.

Alarm set points shall be established through the procedures in the reference documents. Each collector may require a different alarm level and therefore the alarm level will be determined on a case-by-case basis.

The following periodic PMs/Quality Assurance Procedures must be performed at the frequencies specified below. If results are documented on PM sheets, copies of those must also be kept (must document all actions and times performed):

- Annual
  - Perform system zero check
    - System should read zero when the dust collector is turned off
  - Determine if settings need to be adjusted
- Quarterly
  - Seasonal Variation Adjustments (if necessary)
- Monthly – PM 18906
  - Sensor inspection and cleaning
  - Response Test
- No adjustments may be made without prior approval from the Agency (except quarterly seasonal variation adjustments)

The spare parts inventory includes:

- Minimum – circuit board set and probe
- Recommended – 1 full spare unit

Alarm Settings and Response:

TRG's BBD Alarm Settings (DO NOT CHANGE WITHOUT AUTHORIZATION):

	Scaling (DIP 5-8 Settings)	Scaling (4-20mA Output)	Operating Mode (DIP 1-4 Settings)	Alarm Setpoint	Alarm Delay	Typical Baseline Range
South Fuller / Small Dustar (common stack)	0101	Linear 0-500pA	Normal	50% of scale	5 s	2-10%

The alarm settings are established during the initial adjustment and must be documented on the *Bag Leak Detection Settings Log* or equivalent. When an alarm is triggered, the following must be documented in the *Bag Leak Detection Alarm Log* or equivalent:

1. time the alarm sounds
2. time corrective action is initiated to determine cause (within 1 hour of alarm)

3. time corrective action is taken (within 24 hours of alarm)
4. time corrective action completed (as soon as possible)

Corrective actions include, but are not limited to:

1. inspecting the baghouse
2. sealing off defective filter media, or eliminating the pulsing of that row
3. replacing defective filter media
4. sealing off a defective compartment
5. cleaning or repairing the bag leak detection system
6. making process changes
7. shutting down the process

Blank Bag Leak Detection System Alarm Log Form (kept in maintenance files):

Metal Technologies, Inc.
Three Rivers Gray Iron

Broken Bag Detector Log

DATE	TIME OF ALARM	TIME ACKNOWLEDGED	CAUSE OF ALARM	CORRECTIVE ACTION	DATE/TIME CORRECTIVE ACTION INITIATED	DATE CORRECTIVE ACTION COMPLETED
		within 1 hour of alarm	Examples: weather, torn bag, duct hit by equipment, etc.	Examples: Inspect, replace bags, clean BBD, shut down, etc.	within 24 hours of alarm	as soon as practicable

EVERY ALARM MUST BE LOGGED

Data Monitoring and Storage:

The bag leak detector output is stored on a computer at the facility. The output is continuously monitored by the alarm mechanism, and a data point is stored at least every 10 seconds. Do not use data from periods of malfunction, adjustment, or calibration.

Emission Limitations & Work Practices – 63.7690 & 63.7700

Work Practices are defined for scrap preheaters (63.7700(e)) and scrap selection, certification and inspection (63.7700(a)-(c)).

- The scrap preheaters utilize gas-fired direct flame impingement and therefore are not subject to the VOHAP emission limitations in 63.7690(a) (9).
- MTI facilities with core machines only utilize DMIPA as a catalyzing agent, therefore are not subject to the TEA emission limitations in 63.7690 or work practice standards in 63.7700.

Scrap Certification Program – 63.7700(b)

- MTI foundries purchase and use only "metal ingots, pig iron, slitter, or other materials that *do not* include post-consumer automotive body scrap, post-consumer engine blocks, post-consumer oil filters, oily turnings, lead components, mercury switches, plastics or free organic liquids." The raw material specifications, which specify these requirements, are located on the company intranet on the Purchasing page. As aloud in 63.7700(b), MTI foundries may use "Any post-consumer engine blocks, post-consumer oil filters, or oily turnings that are processed and/or cleaned to the extent practicable such that the materials do not include lead components, mercury switches, chlorinated plastics, or free organic liquids…" and remain in compliance with the Work Practice Standards of 63.7700(a).
- Of particular interest to MTI foundries is the use of "oily turnings" that have been processed and/or cleaned to the extent practicable as noted above. MTI facilities only melt dry turnings. Any turnings that are oily go through a drying process and % moisture is recorded for each batch and stored at the drying facility.

Scrap Selection & Inspection Program – 63.7700(c)

As of 2014, MTI foundries do not purchase any scrap materials which are not covered under 63.7700(b), and therefore are not required to operate by this standard.

START-UP, SHUTDOWN, AND MALFUNCTION (SSM) PLANNING – 63.7720

Definitions:

Excess Emission: for the purposes of this plan, an Excess Emission is an abnormal condition, start-up, shutdown, or a malfunction that results in emissions in excess of any applicable standard or limitation (MACT or permit limit).
Abnormal: for the purposes of this plan, Abnormal refers to an **unusual** operating condition (such as a malfunction) that could result in a discharge of emissions greater than is allowable under a rule or permit.
Normal: for the purposes of this plan, Normal refers to conditions that usually occur during the start-up or shutdown of subject process or pollution control equipment and that are consistent with safety and good air pollution control practices for minimizing emissions.

The SSM Planning requirements are subjective in that documentation and response is only required when Excess Emissions occur, and Excess Emissions may not be easily recognized. A process or pollution control device will be presumed to comply with all applicable emission standards and limitations during start-up and shutdown if operated normally.

Malfunction Response:

A record must be kept for every Abnormal event (e.g. a BBD alarm), including:

1. the time of the event,
2. the equipment involved,
3. a full description of the condition,
4. a full description of the corrective action,
5. actions taken to minimize emissions during malfunction,
6. the duration of the event, and

7. a determination of whether or not this plan was followed. A logbook is kept by the computer monitor to allow for alarm recording and notes regarding corrective actions.

CONTACT ENVIRONMENTAL ENGINEERING IMMEDIATELY UPON DISCOVERY OF ANY MALFUNCTION OR ABNORMAL CONDITION, START-UP, OR SHUTDOWN.

If there is excessive visual opacity from the stack of the collector or if the operating parameters are repeatedly out of range, Maintenance will:

- Determine the extent of the damage and direct repairs and inspections of the malfunctioning unit and estimate the level of time and effort required to repair the unit.
- If the equipment cannot be repaired during normal operation, the affected process equipment will be shut down until the repairs can be made.
- Maintenance is responsible for documenting the repairs and that the recordkeeping and reporting requirements are met.

Specific corrective actions for malfunctions are based on Maintenance determination and are made as soon as practicable after their occurrence.

The malfunctions covered must include malfunctioning process equipment, air pollution control systems, and monitoring systems. *It should be understood that the alarm conditions caused by weather in the form of rain and snow do not constitute a malfunction or abnormal condition. Weather related alarms are a normal part of the operation and only require that we note the weather as the cause of the alarm.*

Start-up and Shutdown Procedures:

Procedure for Start-up:

1. Start the pollution control equipment prior to beginning production
2. Ensure all appropriate operational parameters are within specified ranges, such as:
    a. Differential pressure
    b. Temperature
    c. Blower motor amperage
3. Begin production and ensure parameters remain within specified ranges
4. Immediately notify maintenance of any abnormal conditions

Procedure for Shut-down:

1. Wait until production has ceased
2. Shut down pollution control equipment

Reportable Malfunction Determination:

If a system malfunction occurs that is NOT on the following list, or a period of excess emissions occurs, records must be kept that an abnormal condition occurred, the duration of the abnormal condition, and confirmation that the Plan was followed. This will likely be in the form of a work order issued through Maintenance.

Specific corrective actions for malfunctions are based on Maintenance determination and are made as soon as practicable after their occurrence.

Some possible operating problems for the collectors include:

- The bags get too full
- Garbage, like paper, is collected by the equipment and plugs the screen
- Air lock plugging or failure
- Pulsars stick

If a malfunction occurs that is not on this list, the problem will be logged and may need to be reported to the Agency as an Immediate SSM Report (see reporting requirements).

The list of possible abnormal conditions may be revised periodically without prior approval of the Agency. All versions of the plans must be kept electronically on site indefinitely. Each revision must be reported in the Semiannual Compliance Report. If the Plan fails to address a failure, it must be revised within 45 days after the event to correct the deficiency. A written notice must be provided to the Agency if the revision "alters the scope or the activities at the source which are deemed to be startups, shutdowns, or malfunctions".

Malfunction Reporting:

The following table summarizes the reporting requirements for TRG:

Agency (Rule)	Excess Duration	HAP Excess Duration	Verbal Report Within	Written Report Within
Federal (63.6(e)(3))	Any – and SSM Plan Not Followed		2 days	7 days
Michigan (R336.1912)	2 hours	1 hour	2 days	10 days

Immediate SSM Report

Required if a SSM occurred that was not consistent with the SSM Plan, or the SSM Plan was not followed, and an emission limit was exceeded or an operating limit parameter not met as a result.

The immediate report must consist of a phone call or fax to the Agency within 2 working days after the event occurred. It must be followed by a letter, delivered or postmarked within 7 working days after the end of the event, which contains the following:

- Name, title, and signature of a responsible official certifying its accuracy.
- Explanation of the circumstances surrounding the event.
- The reasons for not following the SSM Plan.
- Description of all excess emissions and/or parameter monitoring exceedances which are believed to have occurred.

Preventative Maintenance Records – 63.7745(a)(2)

All records will be available on site, either in hard copy or electronic, and available upon request. Preventive maintenance inspections are intended to identify equipment problems and are reported to the maintenance facilitator. Proof of continuous compliance with all requirements of the plan must be maintained.

- Records must be kept for at least 5 years unless otherwise specified.
- All versions (revisions) of this plan must be kept on site for the life of the foundry.

The inspection record can include:

- Visual inspection description of the interior components of the bag house, including date, time, and findings
- Black light inspections, including date, time, and findings
- Date and number of filter bags replaced
- Each observation of visible emissions at the stack discharge point and description of response activities to the observed visible emission, including date, time of visible emission occurrence, and results of the EPA Method 9 observation, if any
- All significant maintenance activities performed on the bag house