

HAVS CADILLAC ENVIRONMENTAL PROCEDURE

Subject: MAP / SSMP / WPP Malfunction Abatement Plan	Procedure Number & Revision Level: CEP 900.01	Page: 1 of 9
Owned by: Tom Jackson	Approved by:	

1.0 PURPOSE

The purpose of the MAP (Malfunction Abatement Plan/Preventive Maintenance Program) is to provide a complete preventative maintenance program, operating variables and corrective actions for each source and air cleaning device listed in MI-ROP-A9634-2014c. The MAP consists of two parts: 1) the preventive maintenance program and 2) the malfunction abatement and equipment monitoring program.

The purpose of the SSMP (Startup, Shutdown, Malfunction Plan) is to address the startup, shutdown, and corrective actions in the event of a malfunction of any PeTE or the RTO that would cause the emission unit(s) to exceed the applicable NESHAP emission limit. The plan must also address any coating operation equipment that may cause increased emissions or that would affect capture efficiency if the process equipment malfunctions, such as conveyors that move parts among enclosures. The MAP, described above, covers the malfunction portion of the SSMP.

The purpose of the WPP (Work Practices Plan) is to minimize organic HAP emissions from the storage, mixing, and conveying of coatings, thinners and/or other additives, and cleaning materials used in, and waste materials generated by coating operations. The WPP consists of general operational controls and housekeeping measures for management of materials containing VOC and/or HAP.

2.0 SCOPE

This procedure is applicable to the operation of all sources and emission units listed in MI-ROP-A9364-2014c located at 600 Seventh Street, Cadillac, MI 49601.

3.0 RESPONSIBILITY

Application of, and adherence to, this procedure is the responsibility of all HAVS employees and contractors operating, maintaining, or supervising equipment listed as control measures or emission sources in MI-ROP-A9364-2014c.

4.0 DEFINITIONS

HAP: Hazardous Air Pollutants

HAVS: The authorized acronym for Hutchinson Antivibration Systems, Inc., the Automotive Anti-Vibration and Noise Reduction Systems division of [Hutchinson North America](#) (HNA).

MAP: Malfunction Abatement Plan/Preventive Maintenance Program; The MAP describes the methods by which anticipated malfunctions will be managed by the facility.

PeTE: Permanent Total Enclosure

ROP: Renewable Operating Permit; The ROP is issued by the Michigan Department of Environmental Quality and provides the facility’s authority to operate the VOC / HAP source(s) in accordance with the conditions and requirements as outlined in the permit.

RTO: Regenerative Thermal Oxidizer

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SSMP: Startup, Shutdown, Malfunction Plan; The SSMP describes the methodology by which the RTO system is started from a “cold” state to full treatment operation and shutdown from operational status to full cold shutdown.

VOC: Volatile Organic Compounds

WPP: Work Practices Plan; The WPP describes methods and activities which fugitive emissions of VOC and HAP are minimized during typical operations.

5.0 PROCEDURE

5.1 MAP - Preventive Maintenance Program

This program is designed to minimize equipment malfunctions by establishing a preventive maintenance schedule for all equipment and accessories associated with the air pollution control systems. The following table lists the items to be inspected, the frequency of inspections, responsibility for inspection, and replacement parts kept in inventory. During inspections the following information will be recorded:

Preventive Maintenance Program

Unit	Item inspected	Frequency	Responsibility	Replacement Parts
RTO	Inspect RTO for any signs of damage.	Weekly	Maintenance	
	Inspect hydraulic hoses/lines for leaks.	Weekly	Maintenance	Hose/fittings/valves
	Inspect hydraulic pump/tank for level and leaks.	Weekly	Maintenance	Pump
	Inspect hydraulic cylinders for leaks.	Weekly	Maintenance	Cylinders
	Inspect poppet valve switches for tightness.	Weekly	Maintenance	Switches and cables
	Inspect primary filters.	Weekly	Maintenance	Filters
	Grease fan shaft bearings.	Weekly	Maintenance	Grease / Bearings
	Remove and clean air filters on cabinet and VFD	Weekly	Maintenance	
	Replace primary filters	Bi-weekly	Maintenance	
	Grease fresh air damper linkages.	Monthly	Maintenance	Linkage
	Grease gas valve fittings.	Monthly	Maintenance	Gas valve
	Grease low fire cam.	Monthly	Maintenance	
	Clean TSI flow meter probe	Monthly	Maintenance	
	Remove and clean draft fan filter	Monthly	Maintenance	Filter
	Verify accuracy of chamber thermocouples.	Quarterly	Maintenance	Thermocouples
	Inspect wiring, connections, and relays	Semi-annual	Maintenance	Switches and relays
	Inspect ceramic media	Annual	Maintenance	
	Inspect poppet valves	Annual	Maintenance	
	Inspect gas train, burner, and burner control	Annual	Maintenance	Burner control
	Inspect UV Scanners	Annual	Maintenance	UV Scanner
Inspect Thermocouples	Annual	Maintenance	Thermocouples	
Monitor Average Combustion Temperature. Alarm if temperature drops below operational limit of 1500°F.	Continuous	Watchdog		
EUAUTODIP	Monitor pressure differential drop across PeTE. Alarm if pressure differential below operational limit of 0.007 in w.c.	Continuous	Watchdog	Magnehelic gauge
	Verify accuracy of each transducer and visually inspect sensing tubes for leaks, blockage, or damage.	Monthly	Technician	
EUAUTODIP2	Monitor pressure differential drop across PeTE. Alarm if pressure differential below operational limit of 0.007 in w.c.	Continuous	Watchdog	Magnehelic gauge

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	Verify accuracy of each transducer and visually inspect sensing tubes for leaks, blockage, or damage.	Monthly	Technician	
EUCOE1	Monitor pressure differential drop across PeTE. Alarm if pressure differential below operational limit of 0.007 in w.c.	Continuous	Watchdog	Magnehelic gauge
	Verify accuracy of each transducer and visually inspect sensing tubes for leaks, blockage, or damage.	Monthly	Technician	
EUCOE2	Monitor pressure differential drop across PeTE. Alarm if pressure differential below operational limit of 0.007 in w.c.	Continuous	Watchdog	Magnehelic gauge
	Verify accuracy of each transducer and visually inspect sensing tubes for leaks, blockage, or damage.	Monthly	Technician	
EUCOE3	Monitor pressure differential drop across PeTE. Alarm if pressure differential below operational limit of 0.007 in w.c.	Continuous	Watchdog	Magnehelic gauge
	Verify accuracy of each transducer and visually inspect sensing tubes for leaks, blockage, or damage.	Monthly	Technician	
EUCOE4	Monitor pressure differential drop across PeTE. Alarm if pressure differential below operational limit of 0.007 in w.c.	Continuous	Watchdog	Magnehelic gauge
	Verify accuracy of each transducer and visually inspect sensing tubes for leaks, blockage, or damage.	Monthly	Technician	
RSM01	Monitor pressure differential drop across PeTE. Alarm if pressure differential below operational limit of 0.007 in w.c.	Continuous	Watchdog	Magnehelic gauge
	Verify accuracy of each transducer and visually inspect sensing tubes for leaks, blockage, or damage.	Monthly	Technician	
EUROLLCOAT	Monitor pressure differential drop across PeTE. Alarm if pressure differential below operational limit of 0.007 in w.c.	Continuous	Watchdog	Magnehelic gauge
	Verify accuracy of each transducer and visually inspect sensing tubes for leaks, blockage, or damage.	Monthly	Technician	

5.2 MAP - Malfunction Abatement and Equipment Monitoring Program

This program is intended to identify any abnormal conditions or malfunctions associated with the air pollution control systems. The following table lists the equipment that could cause the emission limits to be exceeded in the event of a malfunction, the monitored operating conditions, and the corrective actions to be taken to achieve compliance during a malfunction of the equipment.

Malfunction Abatement and Equipment Monitoring Program

Unit	Operating Condition	Operating Range	Monitoring Frequency	Corrective Action in the event of Malfunction
RTO	Temperature	Minimum 1500°F (3 hour average)	Continuous	<p>Do not operate the coating processes unless the RTO is within the proper operating range. .</p> <p>In the event of an RTO system fault, the system will shut down and sound an alarm. If the RTO faults and shuts down, all coating operations must be stopped as quickly as possible.</p> <p>The fault should be examined to determine the cause of the out of range reading and a repair determined. After the problem has been fixed, the RTO system must be restarted as per the SSMP to return the unit to operation before coating operations can resume.</p>

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PeTE for EUAUTODIP	Differential Pressure	Negative Pressure (0.007 in w.c.)	Continuous	Do not operate the coating process required to be inside the permanent total enclosure unless it is under negative pressure (airflow into the enclosure).
				If the differential pressure alarm is activated, the shift cement leader will determine if the direction of airflow is into the enclosure using visual indicating method (i.e. streamer) or with handheld differential meter. If the direction of the airflow is into the enclosure, maintenance will be contacted to audit the transducer. If airflow is determined to be out of the enclosure, the coating operation will be stopped as quickly as possible, and the airflow direction corrected.
				In the event of a malfunction, follow procedures outlined in the Malfunction Abatement Contingency Plan.
PeTE for EUAUTODIP2	Differential Pressure	Negative Pressure (0.007 in w.c.)	Continuous	Do not operate the coating process required to be inside the permanent total enclosure unless it is under negative pressure (airflow into the enclosure).
				If the differential pressure alarm is activated, the shift cement leader will determine if the direction of airflow is into the enclosure using visual indicating method (i.e. streamer) or with handheld differential meter. If the direction of the airflow is into the enclosure, maintenance will be contacted to audit the transducer. If airflow is determined to be out of the enclosure, the coating operation will be stopped as quickly as possible, and the airflow direction corrected.
				In the event of a malfunction, follow procedures outlined in the Malfunction Abatement Contingency Plan.
PeTE for EUCOE1	Differential Pressure	Negative Pressure (0.007 in w.c.)	Continuous	Do not operate the coating process required to be inside the permanent total enclosure unless it is under negative pressure (airflow into the enclosure).
				If the differential pressure alarm is activated, the shift cement leader will determine if the direction of airflow is into the enclosure using visual indicating method (i.e. streamer) or with handheld differential meter. If the direction of the airflow is into the enclosure, maintenance will be contacted to audit the transducer. If airflow is determined to be out of the enclosure, the coating operation will be stopped as quickly as possible, and the airflow direction corrected.
				In the event of a malfunction, follow procedures outlined in the Malfunction Abatement Contingency Plan.
PeTE for EUCOE2	Differential Pressure	Negative Pressure (0.007 in w.c.)	Continuous	Do not operate the coating process required to be inside the permanent total enclosure unless it is under negative pressure (airflow into the enclosure).
				If the differential pressure alarm is activated, the shift cement leader will determine if the direction of airflow is into the enclosure using visual indicating method (i.e. streamer) or with handheld differential meter. If the direction of the airflow is into the enclosure, maintenance will be contacted to audit the transducer. If airflow is determined to be out of the enclosure, the coating operation will be stopped as quickly as possible, and the airflow direction corrected.
				In the event of a malfunction, follow procedures outlined in the Malfunction Abatement Contingency Plan.

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PeTE for EUCOE3	Differential Pressure	Negative Pressure (0.007 in w.c.)	Continuous	Do not operate the coating process required to be inside the permanent total enclosure unless it is under negative pressure (airflow into the enclosure).
				If the differential pressure alarm is activated, the shift cement leader will determine if the direction of airflow is into the enclosure using visual indicating method (i.e. streamer) or with handheld differential meter. If the direction of the airflow is into the enclosure, maintenance will be contacted to audit the transducer. If airflow is determined to be out of the enclosure, the coating operation will be stopped as quickly as possible, and the airflow direction corrected.
				In the event of a malfunction, follow procedures outlined in the Malfunction Abatement Contingency Plan.
PeTE for EUCOE4	Differential Pressure	Negative Pressure (0.007 in w.c.)	Continuous	Do not operate the coating process required to be inside the permanent total enclosure unless it is under negative pressure (airflow into the enclosure).
				If the differential pressure alarm is activated, the shift cement leader will determine if the direction of airflow is into the enclosure using visual indicating method (i.e. streamer) or with handheld differential meter. If the direction of the airflow is into the enclosure, maintenance will be contacted to audit the transducer. If airflow is determined to be out of the enclosure, the coating operation will be stopped as quickly as possible, and the airflow direction corrected.
				In the event of a malfunction, follow procedures outlined in the Malfunction Abatement Contingency Plan.
PeTE for RSM01	Differential Pressure	Negative Pressure (0.007 in w.c.)	Continuous	Do not operate the coating process required to be inside the permanent total enclosure unless it is under negative pressure (airflow into the enclosure).
				If the differential pressure alarm is activated, the shift cement leader will determine if the direction of airflow is into the enclosure using visual indicating method (i.e. streamer) or with handheld differential meter. If the direction of the airflow is into the enclosure, maintenance will be contacted to audit the transducer. If airflow is determined to be out of the enclosure, the coating operation will be stopped as quickly as possible, and the airflow direction corrected.
				In the event of a malfunction, follow procedures outlined in the Malfunction Abatement Contingency Plan.
PeTE for EUROLLCOAT	Differential Pressure	Negative Pressure (0.007 in w.c.)	Continuous	Do not operate the coating process required to be inside the permanent total enclosure unless it is under negative pressure (airflow into the enclosure).
				If the differential pressure alarm is activated, the shift cement leader will determine if the direction of airflow is into the enclosure using visual indicating method (i.e. streamer) or with handheld differential meter. If the direction of the airflow is into the enclosure, maintenance will be contacted to audit the transducer. If airflow is determined to be out of the enclosure, the coating operation will be stopped as quickly as possible, and the airflow direction corrected.
				In the event of a malfunction, follow procedures outlined in the Malfunction Abatement Contingency Plan.

5.3 Startup, Shutdown, Malfunction Plan (SSMP)

The SSMP is intended to minimize emissions during startup, shutdown, and malfunctions of the emission control systems. The MAP, discussed above, covers the procedures and actions to minimize emissions during malfunctions.

- 5.3.1 In general, the RTO is not shutdown to a “cold” state, but instead put into “Standby Mode” during weekends or holidays when coating operations are suspended. Standby Mode allows the RTO to be quickly brought back to operational status prior to the resumption of coating operations.
- 5.3.2 If it becomes necessary to fully shutdown the RTO system, all coating operations will be stopped as quickly as possible. The facility will follow the RTO manufacturer’s recommendations and procedures to facilitate the shutdown in a safe and efficient manner, while minimizing any fugitive emissions from the halted coating operations. The PeTE systems will be left intact and closed to minimize residual emissions until the total shutdown of the RTO has been completed.
- 5.3.3 During the startup of the RTO system from a “cold” state, the facility will follow the RTO manufacturer’s recommendations and procedures for the automated control sequence startup of the system. The system is started in standby mode and switched to oxidize mode when the average combustion temperature of 1500°F is attained. Coating operations will only commence when both the RTO and PeTE operations and conditions are confirmed.

5.4 Work Practices Plan (WPP)

The WPP is intended to minimize fugitive emissions of VOC and HAP during typical facility operation. The following elements are implemented under the WPP:

- 5.4.1 All VOC and HAP containing coatings, thinners, additives, cleaning materials, and waste materials are stored in covered containers when not in use.
- 5.4.2 Spills of VOC and HAP containing coatings, thinners, additives, cleaning materials, and waste materials are minimized by personnel training and implementation of procedures. Any spills that occur are cleaned up as quickly as possible, and any rags or absorbents used during the spill cleanup are placed into closed containers prior to proper disposal.
- 5.4.3 VOC and HAP containing coatings, thinners, additives, cleaning materials, and waste materials are conveyed from one location to another in closed containers or piping.
- 5.4.4 Mixing vessels which contain VOC or HAP containing coatings, thinners, additives, cleaning materials, and waste materials are kept closed except when adding, removing, or mixing the contents.
- 5.4.5 All spent filters are disposed of in a manner which minimizes the introduction of VOC and HAP emissions.
- 5.4.6 Emissions of VOC and HAP are minimized during the cleaning of storage, mixing, and conveying equipment by limiting the duration of exposure, training of personnel, and by minimizing solvent usage during these activities. Any rags or absorbents used during cleaning activities are placed into closed containers prior to proper disposal.

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5.5 Malfunction Abatement Contingency Plan

Malfunction Abatement Contingency Plan

Condition	Decision	Response	Condition to Response	Action
1. Malfunction discovered.	Can floor personnel repair the malfunction?	Yes	Repairs can be completed within 1 hour.	Complete repairs. Notify supervisor. Review PM/MAP for updates if necessary.
			Repairs cannot be completed within 1 hour.	Inform supervisor and maintenance of the malfunction immediately. Proceed to condition #2.
		No		Inform supervisor and maintenance of the malfunction immediately. Proceed to condition #2.
2. Maintenance informed of malfunction.	Can maintenance repair the malfunction?	Yes	Repairs can be completed in within 1 hour	Complete repairs. Notify supervisor. Review PM/MAP for updates if necessary.
			Repairs cannot be completed within 1 hour.	Inform management of the malfunction immediately. Proceed to condition #3.
		No		Inform management of the malfunction immediately. Proceed to condition #3.
3. Management informed of malfunction. Estimate the malfunctions effect on capture/destruction of HAP and VOC.	Is the malfunction likely to result in emissions that will exceed permit limits?	Yes	Repairs will exceed 2 hours.	Management must take immediate action to minimize the potential to exceed permit emission limits. Proceed to condition #4.
			Repairs will be <2 hours, but > 1 hour.	Management must take immediate action to minimize the potential to exceed permit emission limits. Proceed to condition #4.
			Repairs can be completed within 1 hour.	Proceed with repairs. Monitor time to complete repairs. If repair time > 1 hour, proceed to condition #4.
		No		Proceed with repairs. Monitor emission estimates. If emission estimates exceed permit limits, proceed to condition #4.
4. Reduction of potential to exceed permit emission limits. Management must take corrective measures to ensure that emission levels do not exceed permit conditions: a) Reduce production. b) Stop Production.		Yes	Emission limits were exceeded for > 2 hours.	Notify MDEQ-AQD of the malfunction within 48 hours. Provide written report to the MDEQ-AQD within 10 days of the occurrence. Review PM/MAP program to prevent any reoccurrence of the malfunction.
			Emission limits were exceeded for < 2 hours, but > 1 hour.	Notify MDEQ-AQD of the malfunction within 48 hours. Review PM/MAP program to prevent any reoccurrence of the malfunction.
			Emission limits were exceeded for < 1 hour.	Review PM/MAP program to prevent any reoccurrence of the malfunction.
		No		Review PM/MAP program to prevent any reoccurrence of the malfunction.

6.0 RECORD RETENTION

Completed copies of all records will be retained for 5 years.

7.0 DISTRIBUTION

[HAVS Intranet](#) Access
HSE Coordinator – Master Book

8.0 ATTACHMENTS

