STARTUP, SHUTDOWN, and MALFUNCTION ABATEMENT PLAN

EMISSION CONTROL PROGRAM
For Fabrics Coating Plant at 1125 41st Street

For

Worthen Coated Fabrics
Grand Rapids, Michigan

Revised 03/08/2022

Form #: WCF-SSM-1125
Revision Date: 03/08/2022

STARTUP, SHUTDOWN, MALFUNCTION PLAN: PATRIOT COATER

A. STARTUP CONTROL MODE

a) RTO

1 On RTO screen, push "SYSTEM START" (refer to Picture #1, top left corner)
2 System begins pre-programmed "PURGE"
3 Once "PURGE" light goes to green, burners are ready to light
4 "BURNER START" button will be flashing. Push button to light burners
5 Burner temperatures will rise to Set point of 1600° F.
6 Screen will show "OXIDIZER READY"
7 PLC screens inside PTE 1 and 2 will show a green light / system ready (Refer to Picture #3 as shown, bottom bar "coating range running")

b) Patriot Ovens

a) Oven Startup (Refer to Picture #3, lower left burner button)
1. Power on
2. Utilize PLC touchscreens to set oven temperatures, and fan settings.
3. Once "OXIDIZER ON-LINE" is shown, process is ready to run.

NOTE:

The Nestec Regenerative Thermal Oxidizer uses pre-programmed commands and set points to reach a state of readiness.

Procedure for switching from Controlled to Uncontrolled Operation

1 Procedure is attached, Appendix A.

B. SHUTDOWN PLAN

a) On RTO panel, push "SYSTEM STOP" button
b) On RTO panel, push "MAINTENANCE SHUTDOWN" button
c) System will go into shutdown mode, and clear purge.

C. MALFUNCTION PLAN

a) Types of potential malfunctions:
1 Inlet temperature on Oxidizer less than 1574°F, instantaneously or the three hour average is less than 1574F.

2 RTO burner flameout
3 RTO blower failure
4 Data acquisition system failure

b) RTO temperature chart recorder
1 Data acquisition must be on / charting

c) Response to typical malfunction: (refer to Pictures #2 and #4 "triangular symbols")

1) Alarm sounds when system registers an alarm of RTO failure or when PTE pressure drops below limit set.
2) System will shut down process ovens and coating tenter frame.
3) A. If malfunction can be abated by a reset of systems, resulting in full functions within a ten (10) minute period, operators must log times, and must fill out Malfunction Report, but may continue operations.

B. If the malfunction cannot be amended with in a ten (10) minute time period, the following actions must occur:

1. Collect and contain in a closed container as much wet coating mix from the application head at the beginning of line operations.
2. Wipe off rollers with an appropriate solvent soaked rag and then dispose of the rags in a solid waste container as soon as possible.

4) Record pertinent information on record sheets. (Abatement Malfunction Report Form, attached).
5) Submit malfunction report to the Environmental Manager.
6) Submit copies of coating line (EU-SOLVENT-COAT) production documents for entirety of malfunction to Environmental Manager.
7)

A. Response to RTO temperature chart recorder malfunction

1. Notify supervisor of possible malfunction
2. Verify that the recorder has malfunctioned.
3. Can recorder be fixed within 2 hours (or 10% of the run time)?: Fix chart recorder
4. Cannot be fixed: Replace chart recorder.
5. If running water base manually record PTE pressure differential every fifteen minutes until recorder is fixed/replaced.
6. If running solvent base shut down if the recorder is not fixed/replaced within 2 hours (or 10% of the run time) .
7. Complete form WCF-SSM within 48 hours of the "end time".

NOTE: All preventative maintenance records are kept digitally through a database called Limble. The Plant Maintenance Chief is responsible for verifying and keeping these records up to date.

STARTUP, SHUTDOWN, MALFUNCTION PLAN: MIXROOM

D. STARTUP CONTROL MODE

a) Carbon Filter System

1. **On main electrical panel for the system, turn red knob to on position**
2. **Press the Exhaust On "Green Button" and the system will automatically start up.**
3. **Once the system is running, the chart recorder will automatically start recording.**

Procedure for switching from Controlled to Uncontrolled Operation

1. **To switch from controlled to uncontrolled pressed the Exhaust Off "Red Button" and the system will automatically turn off.**

E. SHUTDOWN PLAN

a) On the main panel press the Exhaust Off "Red Button"
b) On the main panel turn the red knob to the off position
c) This will automatically shut off the recorder also

F. MALFUNCTION PLAN

a) Types of potential malfunctions:

2. Data acquisition system failure

b) Carbon Filter Chart Recorder

3. Data acquisition must be on / charting when in use

c) Response to typical malfunction:

4. Record pertinent information on record sheets. (Abatement Malfunction Report Form, attached).
5. Submit malfunction report to the Environmental Manager.

a. Response to Carbon Filter System chart recorder malfunction
   1. Notify supervisor of possible malfunction
   2. Verify that the recorder has malfunctioned.
   3. Can recorder be fixed within 2 hours (or 10% of the run time)?: Fix chart recorder
   4. Cannot be fixed: Replace chart recorder.
   5. If mixing water base ok to keep mixing
   6. If mixing solvent base shut down if the recorder is not fixed/replaced within 2 hours (or 10% of the run time) .
   7. Complete form WCF-SSM within 48 hours of the "end time".

Appendix A: Procedure for Switching between Controlled/Uncontrolled Operations

The RTO shall be properly operated during all switchover periods. Included in the switchover period is all equipment clean-up from solvent coating.

When switching from Controlled (solvent) operation to an Uncontrolled (waterbase) one, the RTO shall be properly operated for a 15 (fifteen) minute purge period, with no coating operations running.

1) When switching from an Uncontrolled (waterbase) operation to a Controlled (solvent) one, proper operation of the RTO shall begin 15 (fifteen) minutes prior to the start of the switchover taking place (that is, the incinerator operating temperature should be stabilized at 1574°F for 15 (fifteen) minutes prior to commencing any switchover activities). This operation may take up to 8 hours.

2) Proper operation of the RTO shall take place during all equipment clean-up post solvent run.

3) Records showing the date and time of all coatings switchovers and the downtime of the incinerator shall be taken and these records shall be kept on file for a period of at least five years and shall be made available to the Air Quality Division upon request.

NESHAP must maintain a 3-hour block minimum average temperature of 1574F.

Appendix B: Pollution Control Operating Variables

Control System #	Control Equipment	Operating Variable	Monitoring Method	Frequency
1	RTO	Inlet Temperature	Chart Recorder/ Audible Alarm	Daily
1	RTO	Airflow, ductwork	Visual Inspections	Monthly / Semi-annually
2	PTE	LEL	LEL Montioring Equiment/Audible Alarm	Continuous / quarterly
2	PTE	Airlines, Controls	Visual Inspections	Continuous / semi-annually
3	Patriot	Airflow, ductwork	Visual Inspections	Weekly, Monthly, see checklist
3	Patriot	VOC content of coatings	VOC Calculations, recordkeeping	Monthly / semi-annually / annually
4	Mixroom	Airflow, ductwork	Visual Inspections	Weekly, Monthly, see checklist
4	Mixroom	VOC content of coatings	VOC Calculations, recordkeeping	Monthly / semi-annually / annually

Persons Responsible For Plan Completion:

1. Plant Maintenance Chief — Robert Rickers
2. Lead Coating operators — Brandon Austin, Chuck Zagumny
3. Process Engineer — Freddy DuBois
4. Plant/EH&S Manager — Tony Harb

Worthen Coated Fabrics
Abatement Malfunction Report Form

Date:		**Malfunctioning Device:**	
Begin Time:		**End Time:**	
Cause of Malfunction:			
Corrective Action Taken:			

Was production in process at time of malfunction? ☐ Yes ☐ No

If so, was the production process stopped immediately so as to minimize uncontrolled emissions. ☐ Yes ☐ No

If cleaning with solvent on the line, was the RTO in ready mode and running?
☐ No Solvent used ☐ Yes ☐ No

Was the malfunction covered by the Malfunction Plan? ☐ Yes ☐ No

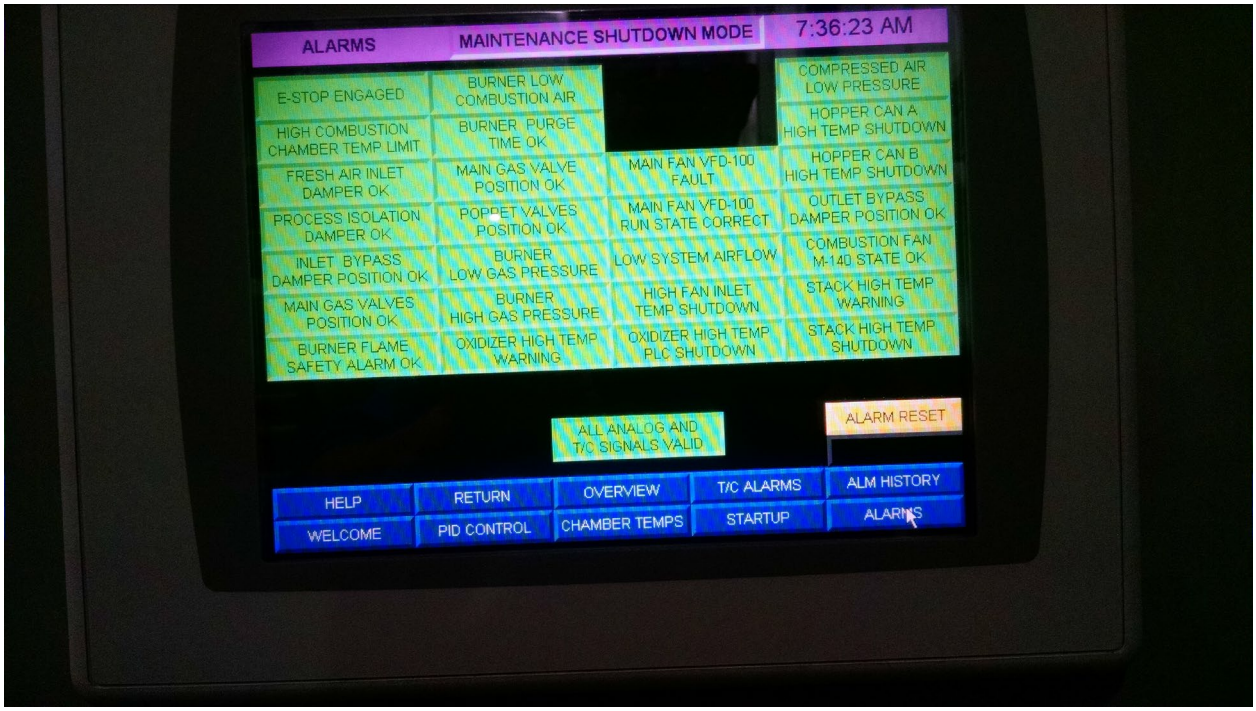
Were your actions consistent with the plan? ☐ Yes ☐ No
If no, explain why. _____

Have you reported the malfunction to the EPA if the actions were not consistent with the plan? ☐ N/A ☐ Yes ☐ No

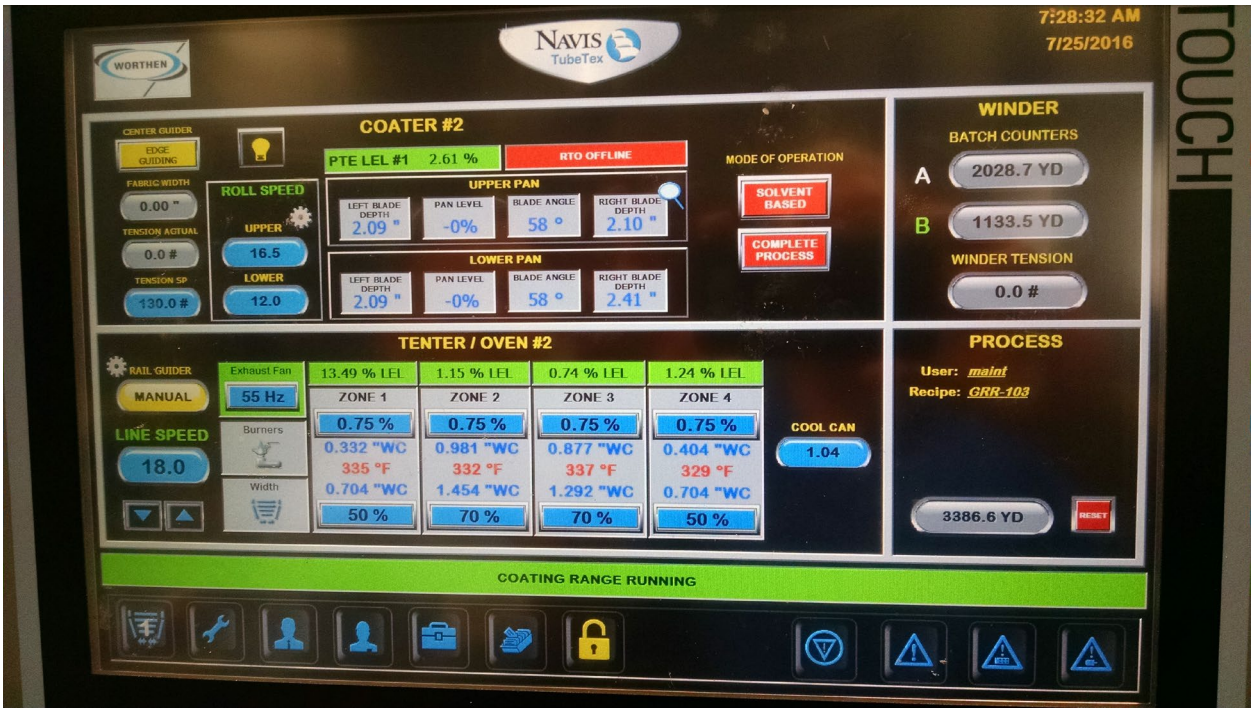
Do you believe any excess emissions occurred? ☐ Yes ☐ No
Explain: _____

Employee Name:	
Signature	
Plant Manager (sign)	
Environmental Manager (sign)	

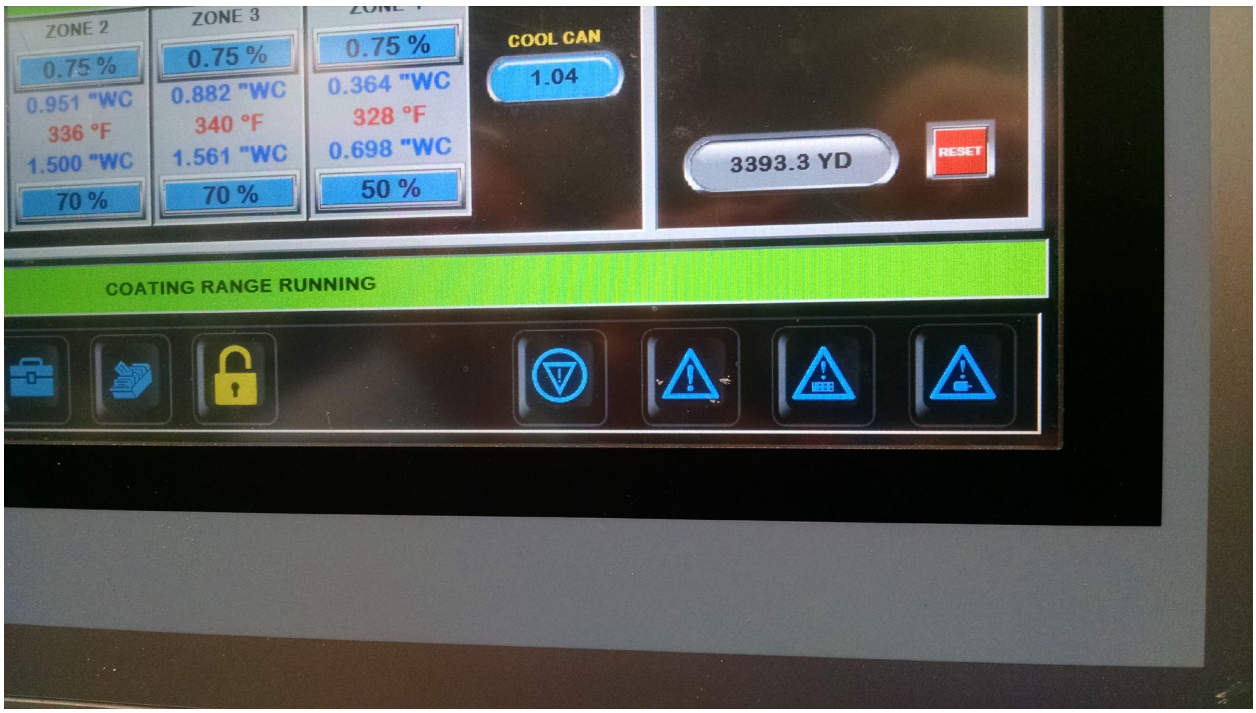
Picture #1



Picture #2



Picture #3



Picture #4

Maintenance Checklists

Line EU-FabricCoater

Do the Following once per shift **Shift 1 □** **Shift 2 □**

- ☐ Do a walk around of all RTO and Oven components
- ☐ Check that the chart recorder is on and charting.
- ☐ Check diverter valves and main fan for proper operation
- ☐ Check oven burners for ignition and combustion
- ☐ Check combustion blower for proper operation
- ☐ Check oven igniters for main burner ignition
- ☐ Check air-fuel ratios on PLC to insure adequate combustion air
- ☐ Check all exhaust fans for proper operation – clear debris as necessary
- ☐ Check compressors and pumps for bearing noise or vibrations
- ☐ Check that all guards are in place and in good condition
- ☐ Check the set point of control instruments
- ☐ Check position of hand valves, manual dampers, secondary air openings, and adjustable bypasses
- ☐ Report any maintenance issues that must be resolved prior to operations starting

Checklist Done By: _____

Date: _____

Maintenance Checklists

Line EU-FabricCoater

Do the Following Once a week **Shift 1 □** **Shift 2 □**

- ☐ Check all lubrication points
  - ☐ 1) RTO
  - ☐ 2) Oven system
- ☐ Check and clean, or replace, air blower filters
- ☐ Check flame failure detection system
- ☐ Check igniter and burner operation
- ☐ Check oven filters for debris. Clean as necessary.

Checklist Done By: _____

Date: _____

Maintenance Checklists

Line EU-FabricCoater

Do the Following Once a Month

- ☐ Check combustion blower inlet filter for clogs or debris
  - ☐ Change filter if necessary
- ☐ Check all air lines for moisture, oil, or dirt
- ☐ Listen for air leaks in lines and fittings
- ☐ Clean all coating pans and the feet of the pans
- ☐ Clean edge guides, pan covers, solvent base pumps and coating pipes
- ☐ Check Fuel Safety Shutoff valve for leaks
- ☐ Check fan and airflow interlocks
- ☐ Check time delay switches (purge timer)
- ☐ Check conveyor interlocks (run relay)
- ☐ Check High Temp limit switch
- ☐ Check explosion venting latches for any damage or looseness
- ☐ Check gas strainer and drip leg for debris
- ☐ Check high and low pressure switches

Checklist Done By: _____

Date: _____

Maintenance Checklists

Line EU-FabricCoater

Do the Following Every Three Months

- ☐ "MD Instruments" will complete quarterly calibrations and maintenance, as specified
- ☐ "MD Instruments" will list and replace or order repair parts as necessary
- ☐ Clean motors free of dust, grease oil, etc.

Checklist Done By: _____

Date: _____

Maintenance Checklists

Line EU-MixRoom

Do the Following Daily

- ☐ Check pre-air filters
- ☐ Verify negative pressure on magnehelic pressure gauge

Do the Following Quarterly

- ☐ Calibrate Sensors
- ☐ Inspect fan belt

Do the Following Annually

- ☐ Lubricate motor bearings

Equipment in Inventory

Equipment in inventory for the RTO:

1. Qty (2) Roller with bushing
2. Qty (2) Idler shaft
3. Fireye scanner
4. Hotside damper actuator
5. Inlet bypass damper
6. Fresh air damper actuator
7. Isolation damper actuator
8. 42” poppet disk
9. Honeywell chart recorder
10. Gas high pressure switch
11. Gas low pressure switch
12. Gas/air ratio actuator
13. Poppet solenoid valve
14. Poppet pneumatic cylinder

Equipment in inventory for the carbon adsorption unit:

1. (6) Filters #12 MF module CRSP filled with Alpha 8%, 23 5/8” x 11 ¾” x 11 5/8”
2. (6) Filters #12 MF module CRSP filled with 50/50 Alpha 8 and 4x8, 23 5/8” x 11 ¾ x11 5/8”
3. (16) Filters filled with 50/50 blend 14 13/16” x 9 ½” x 1 7/8”
4. (1) Sensor Detcon PI-700, photoionization detector (PID), 0-5000 PPM
5. (1) Sensor Honeywell RAEGuard 2, photoionization detector (PID), 1-1000 PPM