

Quality Control Program

Dryer RTO/Press Biofilter Continuous Temperature Monitoring System

Weyerhaeuser NR Company

Grayling OSB

Grayling, Michigan

TABLE OF CONTENTS

1.0	QUALITY CONTROL PROGRAM OBJECTIVES	3
2.0	DOCUMENT CONTROL.....	3
3.0	CONTINUOUS MONITORING SYSTEM DESCRIPTIONs.....	3
4.0	ORGANIZATION AND RESPONSIBILITIES	4
5.0	FACILITIES, EQUIPMENT, AND SPARE PARTS INVENTORY.....	4
6.0	METHODS AND PROCEDURES, DATA ACQUISITION AND ANALYSIS	5
6.1	<i>THERMOCOUPLES</i>	5
6.2	<i>DATA ACQUISITION SYSTEM</i>	5
7.0	PREVENTATIVE MAINTENANCE, CALIBRATION AND QUALITY CONTROL CHECKS	6
7.1	<i>TEMPERATURE SENSOR CALIBRATION/VALIDATION</i>	6
7.2	<i>PREVENTIVE MAINTENANCE AND INSPECTIONS</i>	7
8.0	CORRECTIVE ACTION PROGRAM.....	7

1.0 QUALITY CONTROL PROGRAM OBJECTIVES

The following Quality Control Program is to assure that the continuous temperature monitoring systems located in the Dryer RTO combustion chamber and the Press Biofilter media bed at the Weyerhaeuser facility in Grayling Michigan operate in accordance with the requirements outlined in 40 CFR Part 63.8(d) "MACT General Requirements". The objectives of the program are to:

- a) Assure compliance with the monitoring requirements of Subpart A – General Provisions of 40 CFR 63
- b) Document procedures for monitoring system calibrations/verifications and adjustments
- c) Assure that effective preventive maintenance procedures for the monitoring systems are in place to minimize any malfunctions, including spare parts inventories
- d) Document procedures for data recording, calculations, and reporting
- e) Document procedures for accuracy audits
- f) Document corrective action procedures to be followed for malfunctioning monitoring systems

2.0 DOCUMENT CONTROL

This plan will be maintained for the life of the affected sources or until the affected sources are no longer subject to the provisions of 40 CFR 63. This plan will be made available for inspection upon request by the Administrator. All superseded versions of this plan will be maintained on file for a period of five years after the revision date.

3.0 CONTINUOUS MONITORING SYSTEM DESCRIPTION

Dryer RTO Combustion Chamber - The Clean Switch RTO's are two cell units with one cell on the inlet cycle and the other one on the outlet cycle. The flow remains this way for a set period of time, then the chambers switch by rotating the switch valve, inlet becoming outlet and outlet becoming inlet.

There are four calibrated thermocouples (High Temperature thermocouples -50 – 2300 Degree F) positioned in representative locations in the combustion chambers of each two-cell unit that are used to continuously monitor temperature. The four thermocouple readings are averaged together to obtain an average combustion chamber temperature for each of the two, two cell units. These are then averaged together to obtain the average combustion chamber temperature for the entire RTO.

Press Biofilter Bed - The biofilter consists of two identical media beds. Each bed temperature is continuously monitored by four calibrated thermocouples (Type T Thermocouple, 0 to 250 Degree F)

positioned in representative locations throughout the bed. These four thermocouple readings are averaged together to obtain a biofilter bed temperature and then averaged with the identical unit to obtain the average biofilter bed temperature.

4.0 ORGANIZATION AND RESPONSIBILITIES

The Weyerhaeuser Grayling Structurwood facility is staffed (24) hours per day (7) days per week. Four operations teams (E, S, P, and N) and one support team (A) working on rotating shifts manage facility operation and monitoring. Each operating team is staffed with trained operators and maintenance members to assure proper equipment operation and quick response to any malfunctions. Specific responsibilities assignments for this plan are listed below:

<u>Position</u>	<u>Responsibility</u>
Operations Manager	Overall
On-shift Team Members	Proper equipment operation
Functional Area Coaches	<ol style="list-style-type: none"> 1. Corrective actions 2. Malfunction response 3. Documentation 4. Notify Environmental Manager
Environmental Manager	<ol style="list-style-type: none"> 1. Content of this plan 2. Training team members 3. Maintaining documentation 4. Reporting to MDEQ 5. Assist team members in corrective action and malfunction response
Maintenance Services Team	<ol style="list-style-type: none"> 1. The preventative maintenance and critical spares inventory for each source and control device

5.0 FACILITIES, EQUIPMENT, AND SPARE PARTS INVENTORY

The Grayling facility has an instrumentation shop capable of handling all repair and maintenance needs of the temperature monitoring systems. The shop is well stocked with various spare parts for the monitoring system and has various specialty tools and diagnostic monitors used for repair and maintenance activities. The spare parts inventory is monitored to keep the proper amount of parts in stock. A list of critical spares is included in the mill Start-up, Shut-down, Malfunction, Abatement Plan.

6.0 *METHODS AND PROCEDURES, DATA ACQUISITION AND ANALYSIS*

The continuous temperature monitoring systems are set up to meet the requirements for temperature monitoring set forth in 40 CFR 63.2269 (b). In the following sections the equipment, methods and procedures are covered in more detail.

6.1 *THERMOCOUPLES*

The thermocouples in the temperature monitoring systems have a minimum accuracy of plus or minus 4 Degrees F or 0.75% of the temperature value. All thermocouples have been located in a position that provides a representative temperature of the RTO combustion chamber or press biofilter bed.

6.2 *DATA ACQUISITION SYSTEM*

The Dryer RTO and Press Biofilter temperature data is collected in a dedicated Programmable Logic Computer (PLC). The data comes into the PLC using input modules which are accurate to +/- 0.1 % of full scale. The data is displayed in both the Energy Control Room and the Press Control Room on a dedicated display using a Wonderware application. The data points are stored in the PLC and on an IP 21 data historian. This system deposits its data into a database server where the information can be retrieved for reports and analysis. The system is powered by one or more Uninterruptible Power Supplies for reliability. The computer system alarms the operator of deviations and monitoring system malfunctions. The computer will record the date, time and the maximum reading of the event on an electronic database where the operator can describe the event along with any action taken to correct the upset or malfunction.

The mill continuously monitors RTO combustion temperatures using this system to demonstrate compliance with the operational limit established during stack performance testing. The temperatures from the combustion chamber thermocouples are averaged together and recorded every six seconds. A 15-minute block average is then calculated based on these six second temperature readings. At least 75% of the recorded six second readings for the 15-minute time interval must be available for a valid 15-minute block average. Temperatures recorded during periods of start-up, shutdown or malfunction (RTO bypass) or during period of monitoring system malfunction (e.g. thermocouple failure, PLC issues, etc.) are not be used in the 15-minute block average. Each 15-minute block average RTO combustion chamber temperature is written to the data historian and displayed on the operator screen. A 3-hour block average is then calculated based on all valid 15-minute block averages available for that time period and then compared to the operational limit to verify compliance. At least 75% of the 15-minute block averages for the 3-hour time interval must be available for a valid 3-hour block average. Each 3-hour block average is written to the data historian and displayed on the operator screen.

The mill continuously monitors biofilter bed temperatures using this system to demonstrate compliance with the operational limits established during stack performance testing. The temperatures from the four bed thermocouples in the North and South Biofilter are averaged together and recorded every six seconds. A 15-minute block average is then calculated based on these six second temperature readings. At least 75% of the recorded six second readings for the 15-minute time interval must be available for a valid 15-minute block average. Temperatures recorded during periods of press start-up, shutdown or malfunction or during periods of monitoring system malfunction (e.g. thermocouple failure, PLC issues, etc.) are not used in the 15-minute block average. Each 15-minute block average biofilter bed temperature is written to the data historian and displayed on the operator screen. A 24-hour block average is then calculated based on all of the valid 15-minute block averages available for that time period and then compared to the operational limits to verify compliance. At least 75% of the 15-minute block averages for the 24-hour time interval must be available for a valid 24-hour block average. Each 2-hour block average is written to the data historian and displayed on the operator screen.

7.0 PREVENTATIVE MAINTENANCE, CALIBRATION AND QUALITY CONTROL CHECKS

The calibration and quality control requirements of the continuous temperature monitoring systems are performed in accordance with manufactures set guidelines and 40 CFR 63.2269 (b).

7.1 TEMPERATURE SENSOR CALIBRATION/VALIDATION

There are redundant thermocouples installed in both the RTO and Press Biofilter used to conduct continual validation checks of the temperature monitoring system. These redundant sensors are placed nearby the process temperature sensors and are wired to the PLC. Data from the redundant sensors are compared to the process sensors and an alarm is sent to the operators whenever the difference is greater than 30 Degrees F. Such validation alarms are treated as monitoring system malfunctions and are diagnosed and corrected immediately.

Calibration and validation checks are also done any time a sensor exceeds the manufacturer's specified operating temperature range, or a new temperature sensor is installed.

The accuracy of the temperature sensor is established with an electronic calibration instrument. A hand-held Fluke Model 724 temperature calibrator is used to check the accuracy of each thermocouple used in the RTO and biofilter.

For thermocouples wired directly to an 800 Series or Quantum PLC Thermocouple Card, the hand-held meter is connected to the thermocouple to compare the direct temperature measurement from the

thermocouple with the value registered on the PLC. If the temperature difference between the hand-held meter and the PLC is more than $\pm 30^{\circ}\text{F}$ of the value measured, the problem will be diagnosed, corrected and rechecked. The hand-held meter will then be used to send a signal to the PLC corresponding to a zero and high-level value (100% of span). If the zero and high-level check yields values on the PLC more than $\pm 30^{\circ}\text{F}$ of the span of the thermocouple, the problem will be diagnosed, corrected and rechecked.

For thermocouples wired to a 4 – 20 milli-volt PLC input card with a Rosemont signal transmitter, the hand-held meter will be used to send a signal corresponding to a zero and high-level value (100% of span) to the Rosemont transmitter. The transmitter outputs will then be checked and adjusted as necessary to the zero and high-level values.

Electronic temperature calibration checks are performed semi-annually.

7.2 PREVENTIVE MAINTENANCE AND INSPECTIONS

Each Quarter, all components of the temperature monitoring system are inspected. This inspection includes all electrical connections for continuity, oxidation and galvanic corrosion. Results of these inspections are documented in the mill's work order system

Each day, operators verify that the temperature monitor is responding. This activity is also performed automatically by the PLC.

8.0 CORRECTIVE ACTION PROGRAM

The steps for resolving and reporting malfunctions of the monitoring system equipment are:

Step #1: When a Team Member identifies a malfunction, they take immediate steps to correct the situation. If the Team Member is unable to correct the malfunction and additional resources are required, the appropriate Maintenance Team member(s) is notified.

Step #2: The Maintenance or team member will notify the Environmental Manager if the control device malfunction lasts for over 2-hours.

Step #3: The Environmental Manager verbally notifies the MDEQ- Air Quality Division Engineer within 24-hours or as soon as possible. The Environmental Manager follows up with a written report in 7 days that indicates:

- a) The probable cause of the malfunction
- b) The actions taken to correct the malfunction

- c) Steps taken to prevent a re-occurrence

Detailed corrective action procedures are documented in the mill's Start-up/Shut-down/Malfunction Plan.

Record of revisions:

<i>Date</i>	<i>Description</i>	<i>Section(s) affected</i>
3/20/19	Review/revised	All, Sections 3 and 4
4/28/2015	Review	All
11/16/11	Review	All
6/2/2010	Review	All
6/9/2009	Review	All
6/4/09	Updated Team makeup	Section 4
12/10/2007	Discussion Draft	All
12/20/07	Corrected monitor spans and specs. /issue	Section 7