Grayling Particleboard
MAP Milling and Drying

System Procedure Reference	Operational Control	**Document #**	EHS GPB MD 001
Revision Contact	Environmental Manager	**Revision Date**	May 23, 2019
Revision #	001		

1. Purpose

Preventative Maintenance and Malfunction Abatement Plan-for the Milling and Drying Area of the Facility. Below are the Emission Units and Control Devices for this plan.

Emission Unit	Control Device
EUBARKSTG	BH14B
EUFLAKER	DESP1, BH04, RTO1
EUENERGY	DESP1, RTO1
EUDRYER1, EUDRYER2	RTO1
EUFINES	BH20
EUOVERS1, EUOVERS2, EUOVERS3	BH05
EUSIFTER	BH08

This plan fulfills the requirements in current air permit and Malfunction Abatement plan requirements under MACT standard found in 40 CFR 63 Subpart DDDD.

Function: Under MACT, reduce emissions of Hazardous Air Pollutants (defined in the rule) from SOURCE to 90% as defined in the rule and PSD BACT requirement of 95% control of VOC.

2. Scope

This policy applies to Arauco employees and contract workers within the scope of the EHS MS.

3. Responsibility

Responsible supervisory personnel for overseeing the inspection, maintenance, and repair of air cleaning devices: Milling and Drying Coordinator

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A. Preventative Maintenance Program

Emission Source: EUENERGY

Maintenance Program

Item to be inspected	Frequency of Inspections or repairs	Type of inspection	Recordkeeping Method
Refractory inspection	Annual	PM	SAP Work Order
Refractory inspection	Quarterly	Infrared	SAP Work Order
Emergency stack damper	Annual	Test operation	SAP Work Order
Grate Inspection	Annual	Visual Inspection	SAP Work Order
Clean and inspect of undergrates	Quarterly	Cleaning	SAP Work Order
Feed system	Quarterly	PM	SAP Work Order
Hydraulics	Quarterly	PM	SAP Work Order
Hydraulics	Annual	Oil sample	SAP Work Order
Wet ash removal	Quarterly	Visual Inspection	SAP Work Order
RTD's	Semi annual	Calibration	SAP Work Order
RTD's	Semi annual	Validation of sensor	SAP Work Order
RTD's	Quarterly	PM	SAP Work Order
Dust Burners x 2	Annual	PM	SAP Work Order
Sander dust dosing bin	Quarterly	PM	SAP Work Order
Sanderdust blower filters	As required	Replacement	SAP Work Order
Primary Combustion Fan	Yearly	Bearing repacks	SAP Work Order
Secondary Combustion Fan	Yearly	Bearing repacks	SAP Work Order
Sander dust Combustion Fan	Yearly	Bearing repacks	SAP Work Order
Undergrate Combustion Fan	Yearly	Bearing repacks	SAP Work Order
Hog fuel bin wall wear	Yearly	NDT	SAP Work Order

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Emission Source: EUFLAKERS

Maintenance Program

Item to be inspected	Frequency of Inspections or repairs	Type of inspection	Recordkeeping Method
Flaker building	Condition based	Cleaning	Check sheets
Flaker impeller	2 weeks	Lube	SAP Work Order
Flaker hydraulic Unit	Yearly	Oil change/test	SAP Work Order
Flaker knife ring gearbox	Yearly	Oil change/test	SAP Work Order
Flaker impeller	Yearly	PM	SAP Work Order
Flaker drive motors	Yearly	PM	SAP Work Order
Flaker impeller shaft	2 Years	Bearing repack	SAP Work Order

Emission Source: EUDRYER1, EUDRYER2

Maintenance Program

Item to be inspected	Frequency of Inspections or repairs	Type of inspection	Recordkeeping Method
Gas Burners	Annual	Tune up	SAP Work Order
Refractory inspection	Annual	PM	SAP Work Order
Refractory inspection	Monthly	Infrared	SAP Work Order
Trunnion Inspection	Monthly	PM	SAP Work Order
Trunnion brg	Annual	Brg repack	SAP Work Order
Drive motors	Monthly	Infrared	SAP Work Order
Drive motors	Monthly	Vibration	SAP Work Order
RTDS	Quarterly	Validation	SAP Work Order
RTDS	Annual	Calibration	SAP Work Order

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Emission Source: EUBARKSTG

Maintenance Program

Item to be inspected	Frequency of Inspections or repairs	Type of inspection	Recordkeeping Method
PMs	Monthly	Maintenance	SAP Work Order
Maintenance	Yearly	Maintenance	SAP Work Order

Emission Source: EUEUFINES

Maintenance Program

Item to be inspected	Frequency of Inspections or repairs	Type of inspection	Recordkeeping Method
PMs	Monthly	Maintenance	SAP Work Order
Maintenance	Yearly	Maintenance	SAP Work Order

Emission Source: EUOVERS1, EUOVERS2, EUOVERS3

Maintenance Program

Item to be inspected	Frequency of Inspections or repairs	Type of inspection	Recordkeeping Method
PMs	Monthly	Maintenance	SAP Work Order
Maintenance	Yearly	Maintenance	SAP Work Order

Emission Source: EUSIFTER

Maintenance Program

Item to be inspected	Frequency of Inspections or repairs	Type of inspection	Recordkeeping Method
PMs	Monthly	Maintenance	SAP Work Order
Maintenance	Yearly	Maintenance	SAP Work Order

Air Cleaning Device: Baghouse (BH04, BH14A, BH14B, BH20, BH05, BH08)

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Maintenance Program

Item to be inspected	Frequency of Inspections or repairs	Type of inspection	Recordkeeping Method
Visual Stack Observation	Weekly	Visual	Log Sheet
Pressure Drop Monitor	Annual	Calibration	SAP Work Order
Fans	Annual	Bearing Repacks	SAP Work Order
Fans	Quarterly	PM	SAP Work Order
Rotary valves	Yearly	PM	SAP Work Order

Air Cleaning Device: ESP

Maintenance Program

Item to be inspected	Frequency of Inspections or repairs	Type of inspection	Recordkeeping Method
Plates	Annual	Cleaning	SAP Work Order
Vibrators/rappers	Annual	Cleaning	SAP Work Order
Inspect/Clean insulators and electrical connections	Annual	Inspection	SAP Work Order
ESP operation	Continual	Visual	Historian
Ash removal system	Annual	Inspection	SAP Work Order
Ash removal system	Quarterly	Inspection	SAP Work Order

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Air Cleaning Device: RTO

Maintenance Program

Item to be inspected	Frequency of Inspections or repairs	Type of inspection	Recordkeeping Method
Ducts and stacks	Inspect annually or during outages as operations indicate problems	Visual	SAP
Media Condition	Inspect annually	Testing/Visual	Annual inspection report
RTO system bakeout	When prefilter backpressure (water column) reaches 6”.	Cleaning as Needed	Bakeouts are recorded (by temperature) on the chart recorder or MAP press log sheet.
Thermocouples	Semiannually Calibration or Change out	Calibration/Replacement of instrument	SAP Work Order
Thermocouples	Quarterly visual inspection	Validation	SAP Work Order

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Spare parts list for

This list is a list of items to be either kept on hand or if the spare is utilized, then a replacement will be put on order.

Emission Source: EUENERGY

Suggested Spare Quantity	Unit Item Description
1	RTD's
1/size	Hydraulic pumps
1/size	Hydraulic Pump motors
1/size	Hydraulic cylinders
1/size	Hydraulic Directional valves
1	Hydraulic check valves
1	Hydraulic Pressure relief valves
50	Grates
1/size	Fan Bearing
1	Dust Bin Rotary valve

Emission Source: EUFLAKERS

Suggested Spare Quantity	Unit Item Description
24	Impact ledge
24	Wear Plates
72	Wear Shoes
72	Knifes
1/size	Sealing Rigs
1/size	Self aligning bearings
1/size	Withdrawal sleeve
1/size	Cylindrical roller bearing
10	V belts
1/set/size	Brake Lining
1	Safety Switch
1	Proximity Switch
1	Cable Socket

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Emission Source: EUDRYER1, EUDRYER2

Suggested Spare Quantity	Unit Item Description
1	Drum Drive motor
1	Drum Drive motor gearbox
1	Burner ignitor
1	Burner uv sensor
1	Fan motor
2	Fan shaft bearings
2/size	RTD's

Air Cleaning Device: Baghouse (BH04, BH14A, BH14B, BH20, BH05, BH08)

Spare Quantity	Unit Item Description
Full set/size +10%	Bags
Full set/size +10%	Cages
1	Pressure regulator/filter
1	Safety valve
1/size	Air solenoid valve
1	Pressure differential switch
1	Filter Control unit
1/size	Rupture discs
1/size	Fan impeller shaft fixed bearing
1/size	Fan impeller shaft floating bearing
1/size	Fan shaft coupling elements

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Air Cleaning Device: ESP

Suggested Spare Quantity	Unit Item Description
1	Insulator, wall-tube repair kit
1	Hammer
1	Level Detector
1	High voltage insulator repair kit
1	RTD
1	Pressure Deferential Switch

Air Cleaning Device: RTO

Suggested Spare Quantity	Unit Item Description
1	Electronic flame detectors
2	Thermocouples
1/size	Proximity sensors
1	Rotork actuator
1/size	Pressure switches
1/size	Solenoid valves
1/size	PLC modules
1/size	Relays
1	Flame safeguard
1	Ignitor
1	UV Scanner
1/size	Pressure transmitter
1	Maxon gas valve

B. Emission Unit (Source) and Air Cleaning Device Operating Variables to be Monitored

Emission Source: EUENERGY

Operating Variable to be Monitored	**Normal Range of Operating Variable**	**Frequency & method of monitoring malfunction and type of record keeping**
Fuel bin temp	TBD during commissioning	Continuous and Kept on local historian server.
Fuel bin pusher temp	TBD during commissioning	Continuous and Kept on local historian server.
Post-Combustion chamber oxygen analyzer signal	TBD during commissioning	Continuous and Kept on local historian server.
Combustion Chamber Pressure	TBD during commissioning	Continuous and Kept on local historian server.
Combustion Chamber Ash Temp	TBD during commissioning	Continuous and Kept on local historian server.
Combustion Chamber Temp	TBD during commissioning	Continuous and Kept on local historian server.
Post-Combustion Chamber Temp	TBD during commissioning	Continuous and Kept on local historian server.
Dust Burner Combustion Air Pressure	TBD during commissioning	Continuous and Kept on local historian server.
Mixing chamber Pressure	TBD during commissioning	Continuous and Kept on local historian server.
Process water fuel bin feed water pressure	TBD during commissioning	Continuous and Kept on local historian server.

Emission Source: EUBARKSTG, EUFLAKERS, EUDRYER1, EUDRYER2, EUFINES, EUOVERS1, EUOVERS2, EUOVERS3

The above Emission Sources does not have any operating parameters that will directly affect emissions.

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Air Cleaning Device: ESP

Operating Variable to be Monitored	**Normal Range of Operating Variable**	**Frequency & method of monitoring malfunction and type of record keeping**
Voltage and current to Primary and Secondary Transformer/Rectifier (T/R)	Primary T/R: 25-50 kilovolts (KV); 45-325 millamps Secondary T/R: 30-55 kilovolts; 75-650 milliamps	Continuous readout and the data is retained on the onsite historian.

Air Cleaning Device: RTO

Operating Variable to be monitored	**Normal Range of the Operating Variable**	**Frequency & method of monitoring malfunction and type of record keeping**
Prefilter pressure drop (dP)	Less than 6 inches W.C. to be finalized during commissioning.	Continuously monitored in the control room and retained in the outside historian.
Combustion Chamber Temperature	Greater than or equal to XXX degrees Fahrenheit - temperature to be determined with emission testing.	Continuously monitored by a thermocouple, real time readout to control room. Data obtained at least every 15 minutes and averaged to 3-hour block. Recorded in the onsite historian.

Air Cleaning Device: Baghouse

Operating Variable to be monitored	Normal Range of the Operating Variable	Frequency & method of monitoring malfunction and type of record keeping
Prefilter pressure drop (dP)	Range of >.5 lbs to <8 lbs W.C. to be finalized during commission.	Continuously monitored in the control room and retained in the outside historian.
Visual Emission Inspection	Clear emission from stack.	While operating, one per calendar week a visual emission inspection.

C. Corrective Procedures or Operational Changes taken in the event of a malfunction or failure to achieve compliance with applicable requirements.

Emission Units (Source): EUENERGY, EUFLAKERS, EUDRYERS

Malfunction or Failure	Corrective Procedure
Fire in Flakers or Dryers or other mechanical, sensor, or process control failure that causes dryer to shutdown.	Dryers: shutdown gas burners and wood feed into dryers. Continue to vent dryer(s) to RTO if safe to do so. Fire in cyclones or ductwork will cause dryer(s) to vent to bypass stack(s). Energy system: vent to bypass stack. Shutdown dust burners immediately, reduce wood feed rate to grate to minimum idle. Flakers: vent to bypass stack

Air Cleaning Device: RTO

Malfunction or Failure	Corrective Procedure
Lube or hydraulic pump or fan failure.	Start the installation of spare and commence repairs on the failed unit.
>6-inch prefilter pressure drop (dP).	A bakeout will be performed when the down unit is brought up to temperature and the unit is brought offline for the bakeout.

Combustion Chamber Temperature fails to maintain XXX degrees Fahrenheit (TBD in compliance stack test)	An alarm displays on the control panel and the RTO in alarm, will be shut down. At least 3 RTO chambers must be at or above minimum temperature with 2 dryers operating. With one dryer operating, at least 2 RTO chambers must be at or above minimum temperature. Wood feed to dryer(s) will shut down if minimum number of RTO chambers are not operating properly.

Air Cleaning Device: DESP

Malfunction or Failure	Corrective Procedure
Loss of power or low voltage.	The DESP and the Energy Plant will be shutdown immediately until repairs

Air Cleaning Device: Baghouse

Malfunction or Failure	Corrective Procedure
Fire in Baghouse	Emergency vents and process shutdown
Pressure <.5 or >8 inches WC	The cause of the out of range pressure differential will be investigated and repairs and or cleaning will be completed.
Abnormal Visual Emissions.	The cause of the abnormal visual emission will be investigated and repairs and or cleaning will be completed.

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Revision History

Revision Number	Revision Date	Description of Change
00	8/10/2018	Written
001	5/23/2019	Written