FERREX ENGINEERING

MAINTENANCE MANUAL

FOR

4.5x45 Eco Dryer

Draft

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CONTENTS

1. SAFETY / LOTO PROCEDURES

Ensure operators are wearing appropriate PPE while operating the equipment.

The following lists the procedure for locking out and tagging out the dryer.

1. On the HMI Ensure the primary and secondary heaters are turned off by turning the heater selector switch to the off position.
2. On the HMI Turn off the fan (if not already done so) by depressing the fan stop Push Button.
3. On the HMITurn off the drum rotation (if not already done so) by depressing the drum stop Push Button.
4. Primary and Secondary cabinet main power disconnect to the powered off position. Place locks and tags on the disconnect handle / bracket.
5. Check that power is turned off by testing the fan and the drum rotate by depressing the drum start and the fan start push buttons on the HMI. The fan and drum should not start rotating.
6. The drum will have stored heat for some time after the heater is turned off. There are no stored energy devices in the dryer system.

2. EQUIPMENT DESCRIPTION

The electrical dryer has been designed to operate outside or in a building above 40 deg. F. It is designed to remove upto 10% of starting weight of moisture of 20,000 lbs hour material. A moisture sensor located at the discharge will monitor the moisture content of the material leaving the dryer and will adjust the amount of heat as required to maintain the desired discharge material moisture levels.

Primary heater consists of 700KW heater unit with a 3,000 to 6,000 cfm fan that injects hot clean air between temperatures of 200 f upto 700 f into the electric dryer.

Secondary heater consists of 150 kw heater unit with a 600 cfm fan that injects hot clean air between 200 f upto 700 f into the electric dryer's byproduct ducting to keep the air from not concendating.

Baghouse is sized to capture all the byproduct material and have the moisture exist to atmosphere.

3. ASSEMBLY / SET-UP

The dryer drum assembly was assembled and dry tested at the fabricating shop prior to shipping. The dryer drum assembly will be shipped assembled. The remaining air inlet assembly and the air discharge assembly will be broken down with flanged bolted connections required to comply with shipping regulations. The bearings will be lubricated at assembly. When the unit arrives, it should be carefully inspected to make sure that the unit is in good condition and that all of the components listed on the packing slip are received. Loose items are typically packed in boxes on a skid.

The field flanged assembled duct / pipe components will require dust tight sealed connections. Use high temperature joint strip gasket material with joint sealing compound to the housing flanges. When possible, gasketing should be done on the ground before hoisting the piece into place. Duct / pipe sections after the primary and secondary tube heaters are to be insulated. The insulation and the insulation metal coverings including the duct elbows will be supplied and installed during installation. The pipe insulation comes in split preformed sections for easy installation including the tape to seal the insulation joint. The rolled metal insulation cover is to be cut and strapped to the outside of the insulation. Suitable caulking to seal the metal cladding and boots for the ends are supplied.

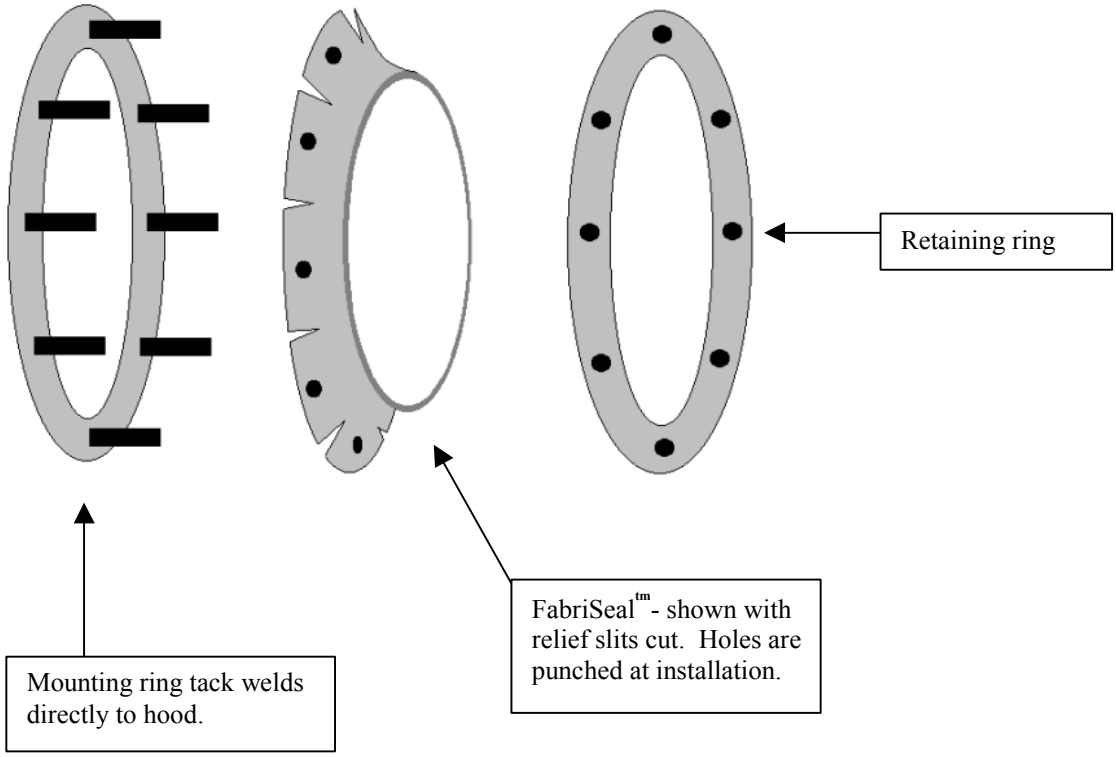
1. The dryer drum assembly will require a spreader beam and straps to be crane lifted off the shipping truck and again during installation. Crane should be rate 20 tons capacity.
2. Using a spreader beam and straps lift and mount the dryer drum assembly on to the drum support frame (drum support frame by installer). Using shims, level the dryer drum and bolt (bolts by installer) the drum to the support frame at six column locations. The dryer drum is to be at an 1.25 degree angle of incline.
3. Mount the vibrating inlet feeder on to the feeder support frame (feeder support frame by installer). The feeder discharge tube is to be aligned with the inlet hole on the face of the drum inlet hood. Using shims as required, bolt the vibrating feeder to the support frame.

Install the expansion joint between the vibrating inlet feeder and the drum inlet hood using the clamps provided.

4. Fill the gearbox with oil to the oil fill level mark on the dip stick.
5. The air inlet assembly as shown on drawing 2243-4545-MC-123 will arrive in pieces to be bolted together. The fan and the primary tube heater support frame would be anchored (anchors by installer) to the building concrete floor after final assembly. Mount and bolt the primary tube heater onto the tube heater support frame supplied. The un-insulated tube heater inlet pipe will have the flanges tack welded only, for testing of the set-up, which will allow a small amount of field adjustment, if required. Break the tack welds and retack the flanges to the pipe if necessary to align bolts and ensure the pipe flanges are flush. Use the garlock seals supplied for the 150# raised face flange connections to the tube heater. After any field adjustments are completed then field weld the pipe flanges to the pipe and bolt the inlet pipe to the fan and the primary tube heater. The primary tube heater insulated discharge pipe would be bolted the drum inlet hood and the tube heater discharge as shown. The flange connection to the primary tube heater would only be tack welded to allow for a small amount of field adjustment as required. It may be required to shim / move the tube heater and support frame if a large amount of adjustment is required. The tube discharge pipe has an expansion joint located just after the connection to the drum inlet hood. The discharge hood is supported with a bracket off the inlet hood. Using the two bolts supplied, finger tightten (with jam nuts) the two bolts so that the discharge pipe can float laterally relative to the expansion joint. After field adjustment is complete, weld the 150# raised face flange to the discharge pipe and bolt to the tube heater to the discharge pipe with the bolts supplied. Use the garlock seals supplied for the 150# raised face flange connections to the tube heater. Use the small container of paint supplied to repair paint and clean up any weld splatter. Install the pipe insulation and insulation cladding.
6. The air discharge assembly as shown on drawing 2243-4545-MC-124 will arrive in pieces to be bolted together. The secondary tube heater support frame is to be bolted to the dryer drum frame as shown. The secondary heater fan support stool is then bolted to the secondary tube heater support frame. On the opposite side of the drum, two brackets are

to be bolted to the side of the dryer drum frame as shown used to support the insulated baghouse inlet pipe. Mount and bolt the the secondary tube heater onto the support frame. Mount and bolt the secondary fan to the fan support stool. Mount and bolt the secondary tube heater inlet pipe between the fan and the secondary tube heater. Use the garlock seals supplied for the 150# raised face flange connections to the tube heater. The secondary tube heater insulated discharge pipe would be bolted at the top to the insulated baghouse inlet pipe. At the top of the drum discharge hood the discharge damper is to be bolted to the top of the drum discharge as shown. Bolt the insulated discharge pipe to the secondary tube heater. Use the garlock seals supplied for the 150# raised face flange connections to the tube heater. Use U-bolts to secure the insulated baghouse inlet duct to the support brackets. Use the small container of paint supplied to repair paint and clean up any weld splatter. Install the pipe insulation and insulation cladding.

Seals Assembly



Seal assembly comes complete with the FabriSeal™, tension strapping and springs, and strap length adjustment clips.

Needed Tools:

1) Sockets and wrenches to fit nuts and bolts of mounting assembly.
2) Sharp knife to cut bolt hole slits into seal.

FabriSeal[tm] Installation:

1) Remove the old seal and replace any old bolts that are damaged.

2) Run a belt sander or grinder over the shell surface around the sealing area to remove any rust, weld spatter, beads, or product buildup. If the shell walks longitudinally during operation, sand the area also where the seal will ride. **Polish the shell as much as possible as this will greatly extend the effective life of the seal.**

3) Lace the yellow tension straps through the belt loops. The straps should be laced in from the ends of the seal to meet in the middle. There will be one segment for shell diameters up to 4', two segments for 4'-8' diameters, and three segments for shells over 8' OD.

4) Sling the seal over the shell such that the seal hangs evenly. This will allow the seal to overlap at the exact bottom of the shell to facilitate possible feed dump cleanout.

5) Starting at the top, position the seal such that it forms a 90-degree angle with the shell (see sketch pg. 3). The seal contact area should be about 2 ½" to 3". Make sure there is **not** severe seal sag between the ring and the shell (This will cause the seal to wander on the shell and possibly invert back into the hood). Use a sharp knife and cut slits in from the outside edge of the seal making sure to only cut deep enough to fit over the bolt holes. This will "relax" the seal on the mounting ring as well as relieve the "pucker" on the shell surface.

6) Work your way down the sides fairly evenly cutting bolt hole slits. As sufficient bolt hole slits are made, clamp the seal in place with the clamping ring segments.

7) When the bottom is reached, make sure the overlap corresponds with the direction of rotation (see sketch pg. 3). If installed backwards, the seal will roll up and fail.

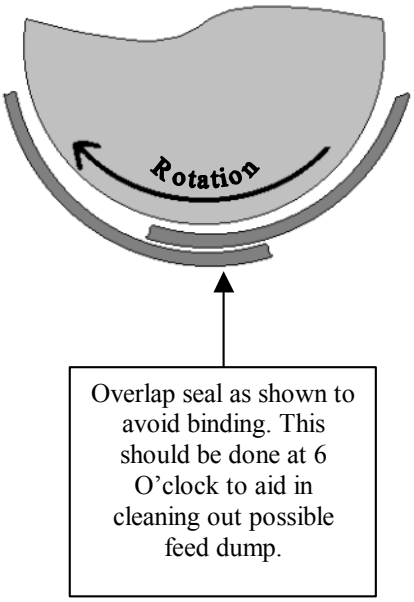
8) Lace the strap ends into the length adjustment clips. Affix the tension springs to the clips. Do not attach the springs to anything other than the strapping clips and vice versa. Do not hang weights from the springs or strapping. You can adjust the strapping length as needed.

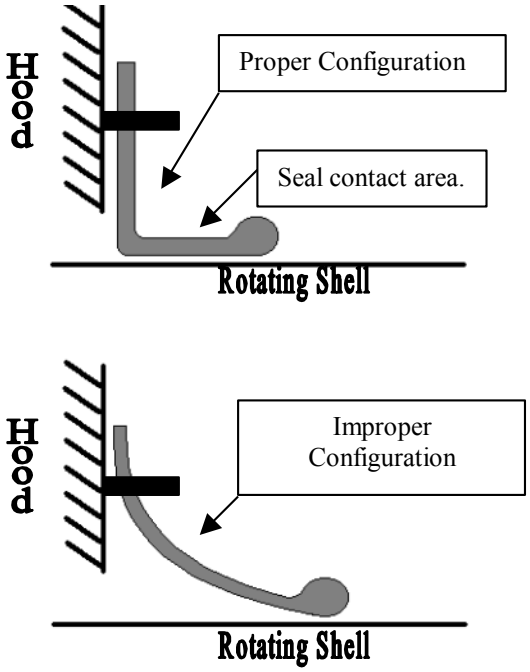
9) Check the sag at the bottom of the seal. A slight gap (1/4" to ½") is desirable at the bottom. This will allow for thermal expansion of the shell when heated.

The last step is important such that testing is highly recommended prior to operation.

10) Rotate the shell while pulling operating draft (if possible) to test the seal fit prior to firing and operation. Observe the fit around the sealing surface. Adjust the fit accordingly remembering to allow for thermal shell expansion. The seal only needs to make light continuous contact with the

shell to be an effective seal. Cranking it down tight to the shell does NOT enhance the sealing properties of the FabriSeal. All this will do is cause the seal to wear much faster.





BAGHOUSE ASSEMBLY / INSTALLATION

1. Foundation loads and structural orientation as per drawing 2243-4545-MC-127. Foundations to be designed by installer. Place structural legs on foundation pads. Bolt the lower bracing clips to the legs using the angle clips. Bolt the top structural channels to the legs making sure the support is free standing. Anchor (anchors by installer) and grout the baghouse support structure to the foundations.
2. See drawing 2243-4545-MC-127 for orientation of the lower hopper. Apply joint sealing compound to all flanges and joints in the assembly of the hopper. Lift the gasketed hopper into the correct position sitting on top of the support channels. After the bottom hopper are in place and the flange gaskets are applied, the top dust collector assembly may be picked up by the lifting lugs. Lift the dust collector into place and set it on the structural support and the hopper. Bolt the bottom flange of the dust collector to the hopper and the support channels. Position holes with drift pins as required.
3. Install all walkways and ladders per the general arrangement drawing. If possible, install the walkways and ladders to the dust collector before lifting the dust collector into place.
4. Apply gasket and sealant to the top flange of the rotary valve and bolt the rotary valve to the flange at bottom of the hopper.
5. Connect clean dry 80-100 psig compressed air (dew point less than -20 F) to the air coupling at the air pipe manifold. A filter, pressure regulator should be installed in the supply line to “fine-tune” the air cleaning system.

ELECTRICAL INSTALLATION

The electrical dryer will come complete with two electrical enclosures, which will be installed behind the main MCC room. One Panel will be labled Main Dryer Panel and one labled Baghouse Heater Panel.

MAIN DRYER PANEL

The main dryer panel will require a 1200amp 480V 3phase 60hz supply to the main disconnect. Refer to drawing 2270-300-E-001.

1. The main heater on the dryer itself requires 6X117KW feeds from the main dryer panel. Please refer to the single line diagram 2270-300-E-001.
2. The tube vibrator feeder requires a main power feed refer to 2270-300-E-001
3. Run a separate 120V 15 Amp feed to Fuse 10 in the panel for the main control circuits. See drawing 2270-300-E-001, 2270-300-E-310.
4. The main motor for the drum rotation is to be connected to the VFD labled Drive Motor. The rotation for this motor must have the drive chain in tension at the top of the drum at all times.
5. The fan motor for the main inlet air must be connected to the VFD labled Fan Motor. Please refer to the rotation arrows on the fan and motor for proper rotation.
6. Field install the Stack Light system close to the dryer. This will allow the system to warn the users that the unit is starting up or has a fault.
7. Install the level sensor on the bracket. Ferrex Engineering will calibrate the level sensor at startup.
8. Install the supplied Thermal Couples (TS3, TS8, (TS5 Moisture sensor)) and wire them back to the PLC cards as per the electrical drawing package included in the specification TS1,2, are on the main heater. Refer to drawing 2243-400-P-001
9. Wire the analog singal cable from the moisture sensor back to the dryer panel PLC as per the electrical drawing package.
10. Refer to 2270-300-E-330 for N.F System ESTOP integration to the dryer panel.
11. The dryer panel will require an Ethernet communication from the business network (the main internet source). Please follow the network diagram provided in the drawing package.

BAGHOUSE SECONDARY HEATER PANEL

1. Install the Panel agecent to the main dryer electrical panel.
2. Follow Drawing 2270-300-E-002 to run the main 400 Amp 480V 3phase 60Hz power supply to the panel.
3. Wire the two 75kw heaters to the main panel as shown on drawing 2270-300-E-002
4. Wire the clean side fan, rotary valve for the baghouse, and secondary heater fan as per drawing 2270-300-E-002.
5. Wire baghouse cleaning valves, and baghouse enclosure heater 120V circuits as per drawing 2270-300-E-310 and 2270-300-E-341.

4. OPERATION

The electric dryer comes with controls that the operator can run in automatic or manual.

If the operator selects automatic (Dynamic Dry) he/she is asked to dial in the output moisture target level. Dynamic Dryer takes care of all the other parameters automatically.

If the operator selects manually all the control variables will default to a standard setting for your material you are running at site. This is set up at site during commissioning. The dryer has been designed with some adjustments that in maual the operator will have to change up or down.

1. The infeed tube vibrator is controlled using a VFD
2. The drum speed is controlled using a VFD
3. The primary heater increase or decrease the temperature to change material moisture level. The primary air fan is controlled using a VFD to control the amount of air passing through the heater and drum. DO NOT CHANGE THE AIR FLOW VFD
4. The fan needs to be running prior to turning on the heater selector switch (electrically interlocked)
5. The secondary increase or decrease the temperature to change material moisture level. The secondary heater fan is controlled using a VFD to control the amount of air passing to the baghouse. DO NOT CHANGE THE AIR FLOW VFD
6. The bag house exhaust fan is controlled using a VFD to control the amount of air being exhausted out of the baghouse. DO NOT CHANGE THE AIR FLOW VFD

5. MAINTENANCE

The following lists the scheduled maintenance for the electrical dryer and baghouse.

Daily Before Start Up.

1) Control HMI – Look at the screens for any warnings or errors. If there are any call Ferrex Service for assistance.
2) Vibrator Level Sensor:- Clean the sensor with a soft cloth to remove all dust particles before feeding the hopper.
3) Moisture Sensor:- Clean the sensor with a soft cloth to remove all dust particles before feeding the hopper.
4) Vibrator Feeder:- Check to see if the springs are broken or have any cracks. If so call Ferrex Service to order new ones.
5) Vibrator Feeder:- Check to see if the springs safety straps are worn. If so call Ferrex Service to order new ones.
6) Vibrator Seal:- Check to see if seal is torn or ripped. If so call Ferrex Service to order a new one.
7) Gearbox Motor:- Check temperature of motor. Slowly place gloved hand on the motor and if running too hot please call Ferrex Service. 8 hours after start up.
8) Primary Fan Motor:- Check the temperature of motor. Slowly place a gloved hand on the motor and if running too hot then call Ferrex Service. 8 hours after start-up
9) Second Fan Motor:- Check the temperature of motor. Slowly place a gloved hand on the motor and if running too hot then call Ferrex Service. 8 hours after start-up
10) Drum Door:- Open the door and check if any bonded material in the drum. If so turn drum rotation on to get rid of material.
11) Drum Door:- Open the door and check for any material bridged in the exist chute. If so clear material out. Start Up
12) Drum:- Check temperature of drum. Run gloved hand down the drum if is warm please notify Ferrex Service. 8 hours after startup
13) Entry Seal:- Check the quality of the seal.If ripped or torn call Ferrex Service to order a new one.

14) Discharge Seal:- Check the quality of the seal. If ripped or torn call Ferrex Service to order a new one.
15) Baghouse :- Check and Record differential pressure (dP).
16) Baghouse:- Verify the timer sequencing row by row.
17) Baghouse:- Check the solenoids are operating.
18) Baghouse:- Check if the diaphragm valves are firing.
19) Baghouse:- Check the rotary discharge value is working
20) Baghouse:- Check for any visible stack emmissions

Weekly

1. Baghouse:- Record compressed air pressure.
2. Baghouse:- Clean compressed aire fliter trap
3. Baghouse:- Check tubesheet for bag leaks
4. Baghouse:- Check that hopper is empty.

Monthly

1. Electric cabinet:- check all fuses if any are blown (light indictator). If so call Ferrex Service for assistance.
2. Idler Rolls:- Check alignment and roll wear. Drum should be running flat against idler roll. If roll has excessive wear grooves order new idlers from Ferrex Service. Brush lubricate idler rolls to prevent corrosion.
3. Thrust Roll:- Check alignment and roll wear. Drum should be running flat against roll. If roll has excessive wear grooves order new Thrust Roll from Ferrex Service. Brush lubricate thrust roll to prevent corrosion.
4. Chain:- Check the chain if dried out then brush lubricate chain.
5. Chain:- Brush lubricate chain bushings from drying out or contaminated.
6. Chain:- Check the tension on the chain and if slack then tension the chain.
7. Motor Sprocket:- Check the wear of the teeth if getting worn down order one to be replaced with in a month.

8. Drum Sprocket:- Check the wear of the teeth if getting worn down order one to be replaced with-in a month.
9. Drum:- Check the wear of the drum. Check the wear of the flights. If flights are worn down by 25% then order a new drum.
10. Primary Heater Fan:- Check for noise and vibrartion if too noisy and vibration check bearings and if need to be replaced order a fan spare kit and install at a later date.
11. Secondary Fan:- Check for noise and vibrartion if too noisy and vibration check bearings and if need to be replaced order a fan spare kit and install at a later date.
12. Baghouse:- Check if ther are any leaks in the access doors. If there is any call Ferrex Service.
13. Baghouse:- Check door seals for deterioration. If there is any call Ferrex Service.
14. Baghouse:- Check airlines and fittings for leaks. If there is any fix the leaks next down day.
15. Baghouse:- Blow out dP gauge lines.
16. Baghouse Fan:- Check for noise and vibrartion if too noisy and vibration check bearings and if need to be replaced order a fan spare kit and install at a later date.
17. Bagouse Fan:- Check for Belt wear. If loose adjust if starting to wear out call Ferrex Service for new belts when received.

Quarterly

1. Bearings;-grease (LGMT2 general purpose grease) lubricate 20 grams~
2. Primary Heater:- Open terminal housing and ensure it is dry and clean.
3. Primary Heater:- Check the resistance between each circuit leg and ground. If reading less than one megohm, contact us.
4. Primary Heater:- Check all terminals for damage and to ensure that all terminals are tight and secure. Care should be taken not to overtighten terminals.
5. Primary Heater:- Check enclosure gasket and replace if damaged.
6. Primary Heater:- Not the position of the over-temp thermocouple. This is marked on the heater flange. Remove bolts from heater and pull heater bundle. Care must be taken in removing the bundle not to damage elements.

7. Primary Heater:- check heater bundle for any sign of buildup of foreign materials. If buildup is noted, clean the elements. Check over-tempthermcouple to ensure it is properly secured to element. If the thermocouple is removed for any reason, it must be re-attached to the same element in the same location.
8. Primary Heater:- When bolting the heater into plae, proper tightening procedures and torque must be used to ensure proper seating of the gasket.
9. Primary Heater:- Reconnect conduit and wires using care to reconnect to the proper terminals.
10. Primary Heater:- Close housing cover using new gasket if necessary.
11. Primary Heater:- When re-starting the heater, monitor for leaks.
12. Secondary Heater:- Open terminal housing and ensure it is dry and clean.
13. Secondary Heater:- Check the resistance between each circuit leg and ground. If reading less than one megohm, contact us.
14. Secondary Heater:- Check all terminals for damage and to ensure that all terminals are tight and secure. Care should be taken not to overtighten terminals.
15. Secondary Heater:- Check enclosure gasket and replace if damaged.
16. Secondary Heater:- Not the position of the over-temp thermocouple. This is marked on the heater flange. Remove bolts from heater and pull heater bundle. Care must be taken in removing the bundle not to damage elements.
17. Secondary Heater:- check heater bundle for any sign of buildup of foreign materials. If buildup is noted, clean the elements. Check over-tempthermcouple to ensure it is properly secured to element. If the thermocouple is removed for any reason, it must be re-attached to the same element in the same location.
18. Secondary Heater:- When bolting the heater into place, proper tightening procedures and torque must be used to ensure proper seating of the gasket.
19. Secondary Heater:- Reconnect conduit and wires using care to reconnect to the proper terminals.
20. Seconday Heater:- Close housing cover using new gasket if necessary.
21. Secondry Heater:- When re-starting the heater, monitor for leaks.
22. Baghouse:- Record pulse duration.

23. Baghouse:- Record pulse delay.
24. Baghouse:- Check bag condition (dirty side).
25. Baghouse:- Check pulse pipe alignment
26. Baghouse Fan:- Check fan belt tension, etc. If a new belt is required call Ferrex Service.

Semi Annually

1. Gearbox;- Check minerial oil viscosity, contamination and oil level.

Yearly

1. Gearbox:- Change oil as required based on loss of oil viscosity or high oil contamination.
2. Primary Heater:- Open the terminal housing. Mark and disconnect all incoming wiring. Disconnect conduit. Check the housing it is clean and dry.
3. Primary Heater:- Re-install heater bundle using new gasket and taking care not to damage the elements. Note position of over-temp thermocouple. Heater bundle MUST be re-installed in the same orientation as when it was removed.
4. Secondary Heater:- Open the terminal housing. Mark and disconnect all incoming wiring. Disconnect conduit. Check the housing it is clean and dry.
5. Secondary Heater:- Re-install heater bundle using new gasket and taking care not to damage the elements. Note position of over-temp thermocouple. Heater bundle MUST be re-installed in the same orientation as when it was removed.
6. Baghouse:- Check case/support for corrosion
7. Baghouse:- Check all bolts and welds
8. Baghouse:- Check ductwork for build up of dust
9. Baghouse:- Bag dye penetrant test.

6. SPARE PARTS

The following is a list of suggested spare parts are broken down into two parts Critical (have on hand) and As Needed.

Critical Parts.

Equipment	Part Id	Quantity
Infeed Vibrator	KEE-18-6 Rotary Electric Vibrator	1
Infeed Vibrator	Coil Springs	4
Baghouse	30 HP Fan motor	1
Primary Fan	25 HP Fan motor	1
Secondary Fan	3 hp Fan motor	1
Primary Heater	700KW heater element	1
Secondary Heater	150 KW heater element	1
Drive system	Idler Roller with Bearings Assembly	2
Drive System	Thrust wheel assembly	1
Drive System	25 Hp Drive Motor	1
Dynamic Dry	VFD primary Fan	1
Dynamic Dry	VFD baghouse fan	1
Dynamic Dry	VFD secondary fan	1
Dynamic Dry	HMI configured with program loaded on it	1
Dynamic Dry	Infeed level sensor	1
Dynamic Dry	Short thermocouple	1
Dynamic Dry	Long thermocouple	1
Dynamic Dry	6 channel 19 Thermocouple input module	1

As Needed.

Equipment	Part ID	Delivery Time
Drive system	10 feet of chain	2 to 3 days
Drive System	Motor drive sprocket	2 to 3 days
Drive System	Idler Sprocket	2 to 3 weeks
Drive System	Reducer with 25 Hp Motor	6 to 8 weeks
Drum	Seal	2 to 3 weeks
Baghouse	Bags	2 to 3 weeks
Baghouse	Cage	2 to 3 weeks
Baghouse	Timer Board	2 to 3 weeks
Baghouse	Pressure Module	2 to 3 weeks
Baghouse	Diaphragm Valve	2 to 3 weeks
Baghouse	Dia. Valve Repair Kit	2 to 3 weeks
Baghouse	Solenoid valve	2 to 3 weeks

7. DRAWING LIST

FERREX #	*DESCRIPTION*	*REV. #*
2243-4545-MC-1*02*	*DRYER GENERAL ASSEMBLY*	*0*
2243-4545-MC-1*23*	*AIR INLET SUB ASSEMBLY*	*0*
2243-4545-MC-1*24*	*AIR DISCHARGE SUB ASSEMBLY*	*0*
2243-4545-MC-1*26*	*DRYER GENERAL ARRANGEMENT*	*0*
2243-4545-MC-1*27*	*DRYER BAGHOUSE FOUNDATION LOADING*	*0*
2270-300-E-000	*ELECTRICAL DRAWING TABLE OF CONTENTS*	*0*
2270-300-E-001	*SINGLE LINE DIAGRAM MAIN HEATER PANEL*	*0*
2270-300-E-002	*SINGLE LINE DIAGRAM SECONDARY HEATER PANEL*	*0*
2270-300-E-200	*PLC MODULE LAYOUT*	*0*
2270-300-E-210	*DIGITAL DC INPUTS SLOT 1*	*0*
2270-300-E-211	*DIGITAL DC RELAY OUTPUTS SLOT 4*	*0*
2270-300-E-212	*ANALOG INPUTS SLOT 5*	*0*
2270-300-E-213	*ANALOG OUTPUTS SLOT 6*	*0*
2270-300-E-214	*ANALOG THERMOCOUPLE INPUTS SLOT 2*	*0*
2270-300-E-215	*ANALOG THERMOCOUPLE INPUTS SLOT 3*	*0*
2270-300-E-216	*DIGITAL AC RELAY OUTPUTS SLOT 7*	*0*
2270-300-E-310	*120V CONTROL POWER*	*0*
2270-300-E-330	*SAFETY CIRCUITS – ESTOP WIRING*	*0*
2270-300-E-341	*CONNECTION DIAGRAM – AUXILLARY CIRCUITS*	*0*
2270-300-E-400	*ETHERNET NETWORK DIAGRAM*	*0*
2243-300-EV-340	*Sub panel wiring diagram*	*0*