

DOCUMENT MANAGEMENT SYSTEM
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Doc# NSCS-M-P-7094-02
 Title: Filter Presses
 Issue Dt: 12/06/2000
 Revision Dt: 07/23/2018 Review Interval: 12
 Cat: Quality Doc Type: SOP
 Auth:
 Desc: Filter Presses
 Loc: Midwest - Utilities-Midwest - Plant Maintenance-Midwest-Gary Works

Purpose: The two filter presses receive the settled sludge from the gravity thickeners. Inside the filter press, the filter cloth traps solids in a chamber and allows filtered wastewater to escape via filtrate holes. The filtrate is returned to the Final Treatment Plant for treatment. When a filter press is full of sludge, the sludge pumps are stopped. Compressed air is injected behind the membrane in the filter press causing it to expand like a balloon. As the membrane becomes fully inflated, the water that is present in the sludge is forced out by compression. The water (or filtrate) is returned to the Final Treatment Plant for treatment. The membranes are deflated and the filter press is opened. The operator indexes the press and removes the sludge. The sludge is then transported to the Greenbelt II Landfill for disposal.

STEPS**PROCEDURES**

Filter Press Room Check

Prior to starting any filter press cycle, walk around the equipment. Visually check to ensure that:

1. All equipment is in the "home" position.
2. No tools or sludge paddles are in the filter press.
3. Control switches are in the proper position.

Valve Check

Prior to starting a filter press unit, verify that all manual valves on the sludge piping are in the correct position.

Manual Filter Press Sludge Cycle

1. Office panel -mode switch to manual.
2. Press panel -drip trays closed.
3. Press panel -follower switch to close
-hydraulic pump switch to manual
4. Office panel -filter inlet valve open
- sludge feed pump to manual and push start button.
5. Record information on Form 7094-02

Start. Squeeze Cycle

6. Turn sludge pump off, when the fill time is reached, by turning the manual feed pump switch off. Start squeeze.
7. Office panel - filter inlet valve off
- vent valve off
- membrane air valve open (should be left open for approximately 25 minutes)

End Squeeze Cycle

8. Office panel - Membrane air valve-off.
- Core blow out switch-open
- Core blow open
9. After 60 seconds:
-Core blow closed
-Core blow out switch closed
-Vent valve switch open

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10. Local panel

- Open Press to Drain Water out of Press
- Open drip trays
- Office panel
- Turn mode switch from manual to press
- Local panel
- Start plate shifter drop cakes (won't start with press closed)

Dropping Sludge Cakes

1. Press Panel: Follower switch-manually open
drip tray switch-manually open
2. Office panel: Mode switch manual to press.
3. Press panel: Plate shift button-press button
4. As the plate shifter grabs plate, some of the cakes will drop off into the dumpsters below. While dropping the sludge cakes, use a hand scraper to remove any cake on the cloths or in the inlet openings.

Cleaning Sludge Chutes & Troughs

5. At the end of each turn, remove any sludge that has built up on the chute slopes. Use the long-handled scraper located on the West end of the press. Secondly, clean the concrete water troughs and floor with a shovel.

AUTO Plate Washing

Plate wash a filter press using procedure outlined below:

Air Compressor Room

1. Check breaker to cloth wash pump-on.
2. Check main water line valve-open.
3. Cloth wash pump oil reservoirs-full
4. Cloth Wash pump sight glass at least - 1/2 full
5. Cleaning drum, at least 5 gal.
6. Cleaning pump drumfeed line valve - open.

Press Room Panel – confirm the following settings:

1. Press in home position
 - a. Follower all the way back
 - b. Plate shifter all the way back
 - c. Bomb-bay doors open
2. All switches to auto
 - a. Plate Washer
 - b. Plate Washer Carriage
 - c. Plate Wash Spray Bar
 - d. Plate Shifter
 - e. Hydraulic Pump
 - f. Follower

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- g. Drip tray
- 3. Set spray bar to desired number of passes.
- 4. Both presses E-Stops out.

Office Panel

- 1. Press Mode switch to manual.
- 2. Press Mode switch to wash.
- 3. Press Room on local panel push wash start button.

Press Room Panel

- 1. Open the hand water valve on the west end of the press
- 2. Plate wash start - press button
- 3. Make frequent checks during the wash cycle.
- 4. Should any malfunction occur, push the E-Stop button immediately to avoid serious mechanical damage.
- 5. Check the concrete trough drain for plugging and clean if necessary.
- 6. After the last plate has been washed, and the carriage is returning to home position, close the West End water valve .
- 7. The carriage will return to home position.
- 8. The Plate Shifter will return to home position.
- 9. Plate Washer Switch - Off.

Office Panel

- 1. Press mode switch to manual.
- 2. The press is now ready for the fill sludge cycle.

Restarting the Plate Washing

If it was necessary to stop the AUTO plate wash cycle, the cycle cannot Cycle be completed in MANUAL mode. **DO NOT** attempt to restart an AUTO wash cycle in mid-cycle as equipment damage may result. Place all equipment in the “home” position using manual control. Once the condition that caused the AUTO cycle to be stopped has been corrected the new AUTO cycle can be started.

E-STOPS

E-STOP means “emergency stop”. Its purpose is to prevent injury to personnel or serious damage to equipment. It is **NOT** to be used for routine ON/OFF. Every control has its own ON/OFF.

The north filter press E-STOPS control

- 1. North filter press
- 2. Center filter feed pump.
- 3. West filter feed pump.
- 4. Cloth wash pump.

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The south filter press E-STOPS control

1. South filter press
2. Center filter feed pump
3. East filter feed pump
4. Cloth wash pump

If the center filter feed pump or cloth wash pump are operating, any E-STOP on EITHER filter press will stop them.

Note: Both pumps will turn off, but the spray bars and wash carriage will continue to run.

Sludge Cycle E-STOP

If it is necessary to E-STOP a filter press sludge cycle

1. Correct the condition that required the E-STOP
2. Leave the filter press CLOSED
3. Finish the cycle under manual controls.

Plate Wash E-STOP

If it is necessary to E-STOP during a plate wash cycle.

1. Put all equipment in "HOME" position prior to resetting computer.
2. Start a new AUTO plate wash cycle.
3. Pushing in any E-Stop while plate washing will stop cloth wash pump; but the spray bars and wash carriage will continue to run

Lime Feed Cycle

Check lime feed sump and add oil to sump pump if needed.

Control Panel

1. Service water switch – on manual when making up lime
2. Line Feed Conveyor Switch - LOC

Outside Lime Control Panel

-Lime Silo Vibrator switch - HAND

Silo Platform

1. Air hammer valve – OPEN (if needed)
2. Check Lime Conveyor auger for lime flow.

L & F Building

Record length on lime feed time in the SDW log sheet 7094-02.

Ending Lime Feed Cycle

Control Panel

Lime feed conveyor switch off

Outside Lime Control Panel

Lime Silo vibrator switch off

Silo Platform

Air hammer valve-OFF

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Lime Slurry Process Overview

The Operator should check the pH's of the gravity thickeners and the sludge flow rate for the last eight hours from the Final Treatment Plant. From this information, a judgment can be made on how much lime to make. If the pH's are low and the sludge flow rate is high a longer lime auger run should be used. If the pH's are high and sludge pumping has been low, then a shorter lime auger run should be used. See NSCS-M-P-7094-01 for more information of gravity thickener pH control.

Lime Slurry Corrective Actions

See NSCS-M-P-7094-01 Corrective Actions Section for improvement of pH control in the gravity thickeners. If additional lime is required it must be fed through the sump.

If no lime is available, notify the ChemTreat and Manager. The SDW plant can still be operated temporarily. See NSCS-M-P-7094-01 pH Process Overview.

If the lime feed equipment (tanks or pumps) are not working properly, notify Maintenance. Note in the SDW Log Sheet 7094-02 the maintenance problems encountered and notify the Manager.

Filter Press Corrective Actions

If the filter press is not operating properly, the Operator should attempt to determine the nature of the problem and correct same. If maintenance staff is required to correct the problem, contact maintenance as needed. See NSCS-M-P-7094-01 if the pH to the filter press is too low. The gravity thickener corrective actions for pH are the same for the filter press.