

CNE CENTRAL PLANT PM TEMPLATES

BOILER PM & INSPECTION

Annual Inspection & Maintenance (October)

Report in with customer representative.

Record and report abnormal conditions, measurements taken, etc.

Review customer logs with the customer for operational problems and trends.

The following listed maintenance items are not intended to be a complete list. Follow any additional maintenance items listed in the boiler operation manual, see attached.

PM reports must show exact equipment label (Tag and Serial #), Plant, Location.

General Assembly

Secure and drain the boiler.

Open the fire and water side for cleaning and inspection.

Check the heating surfaces and water side for corrosion, pitting, scale, blisters, bulges, and soot.

Clean the fire inspection glass.

Replace Condensate Treatment Kits(Install and Expiration Dates need to be on Filter Kits).

Flush boiler drains.

GAS TRAIN & BURNER ASSEMBLY

Follow Manufacture guidelines for Cleaning .

Check the gas train isolation valves for leaks.

Check the gas supply piping for leaks.

Check the gas pilot (where exists)solenoid valve for wear and leaks.

Check the main gas and the pilot (where exists) gas regulators for wear and leaks.

Test the low gas pressure switch. Calibrate and record setting.

Test the high gas pressure switch. Calibrate and record setting.

Verify the operation of the burner fan air flow switch.

Inspect and clean the burner assembly.

Inspect and clean the heat exchanger using high pressure water with a 90 degree nozzle

Replace bolts on clamshell.

Inspect and clean the pilot (where exists) igniter assembly.

Inspect and replace (if needed) High Temp Sealant for Ignitor. Sealant must be replaced if Ignitor is removed.

Inspect and clean the burner fan.

Run the fan and check for vibration.

Inspect the flue and flue damper.

Burner control panel: Inspect for cleanliness, and inspect for wiring and connections for tightness and signs of overheating and discoloration.

Clean burner fan wheel and air dampers. Check for vibration.

Verify tightness of the linkage set screws.

Check the gas valves against leakage (where test cocks are provided).

Clean and/or replace all air filters.

Controls and Safety

Clean the contacts in the program timer, if applicable.

Check the operation of the low water flow switch safety device and feed controls.

Verify the setting and test the operation of the operating and limit controls.

Inspect and Calibrate CO Sensors.

Inspect and Verify Boiler Sequencer is operating correctly and perimeters correct.

Check/Replace all boiler Sequence indicator lights.

NOTE: IN ADDITION TO THE DELINEATION ABOVE, ALL MANUFACTURER'S RECOMMENDED MAINTENANCE TASKS

AND SCHEDULED INTERVALS SHALL BE MET. WHERE A CONFLICT EXISTS BETWEEN THIS DELINEATION AND THE

MANUFACTURER'S PUBLISHED PREVENTIVE MAINTENANCE SCHEDULE, THE CONTRACTOR SHALL REQUEST OF THE OWNER WHICH ITEM SHALL SUPERSEDE.

Quarterly Inspection & Maintenance -(3 per year)(January, April, July)

Report in with customer representative.

Record and report abnormal conditions, measurements taken, etc.

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The following listed maintenance items are not intended to be a complete list. Follow any additional maintenance items listed in the Camus Boiler Operation Manual

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Check the general condition of the unit.

Inspect the burner.

Inspect and replace(if needed) High Temp Sealant for Ignitor. Sealant must be replaced if Ignitor is removed.

Adjust the burner controls to obtain proper combustion.

Check the operation of the low water flow switch and feed controls.

Check the setting and test the operation of the operating and limit controls.

Check the operation of the modulating motor.

Lift the safety/relief valves with at least 70% of rated pressure.

Log operating conditions after the system has stabilized.

Review operating procedures with operating personnel.

Provide a written report of completed work, operating log, and indicate uncorrected deficiencies detected.

Replace Condensate Treatment Kits if Filter has expired(Install and Expiration date need to be on Filter Kits)

Clean and/or replace all air filters

Check/Replace all boiler Sequence indicator lights

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PUMPS

Annual Inspection & Maintenance(January)

Report in with customer representative

Record and report abnormal conditions, measurements taken, etc.

Review customer logs with the customer for operational problems and trends.

Provide email and hard Copy of Annual PM Report

PM Reports must show Exact Equipment Label, Plant, Location

General Assembly

Check motor shaft and pump shaft for alignment, if applicable.

Inspect the coupling for wear.

Verify that the shaft guard is in place and tight, if applicable.

Verify the water flow through the pump.

Check for leaks on the mechanical pump seals, if applicable.

Verify smooth operation pump.

Clean pump strainers as needed but minimum of once per year. CHW - Winter, HHW - Summer

Provide a written report of completed work, operating log, and indicate any uncorrected deficiencies detected.

Lubrication

Lubricate the motor bearings as necessary.

Lubricate the pump bearings as necessary.

Motor and Starter

Clean the starter cabinet.

Inspect wiring and connections for tightness and signs of overheating and discoloration.

Meg the motor.

Verify tight connections on the motor terminals.

Check the condition of the contacts for wear and pitting, if applicable.

Check the contractors for free and smooth operation.

Verify proper volts and amps.

VFD

Vacuum dust from PC boards and internal parts.

Clean filters, blow out if needed.

Visually inspect all power connections.

Inspect/Tighten all electrical connections.

Verify cabinet fan operation.
Verify all start/stop contacts.
Verify supply voltage and phase sequences are correct.
Verify speed command for auto operation.
Start/stop vfd in manual operation.

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Quarterly inspection & Maintenance -(3 per year)(October, April, July)

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Record and report abnormal conditions, measurements taken, etc.
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Lubricate pump bearings per manufacturer's recommendations.
Lubricate motor bearings per manufacturer's recommendations.
Check suction and discharge pressures and log.
Check motor voltage and amperage, and log.
Check for excessive vibration and noise.
Verify smooth operation of the pump.
Check for leaks on the mechanical pump seals, if applicable.

Provide a written report of completed work, operating log, and indicated any uncorrected deficiencies detected.

VFD

Clean filters, blow out if needed.
Visually inspect all power connections.
Verify cabinet fan operation.
Verify all start/stop contacts.
Verify supply voltage and phase sequences are correct.
Verify speed command for auto operation.
Start/stop vfd in manual operation.

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REFRIGERANT/COMBUSTIBLE GAS MONITOR

Annual Inspection & Maintenance-(October)

Report in with customer representative.

Record and report abnormal conditions, measurements taken, etc.

Review customer logs with the customer for operational problems and trends.

Provide email and hard Copy of Annual PM Report

PM Reports must show Exact Equipment Label (Tag and Serial #), Plant, Location.

General

Inspect location and mounting of monitor.

Inspect location of sensor.

Check with equipment operator for unit history.

Check Monitor Connections.

Test and calibrate Sensor.

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Quarterly Inspection & Maintenance-(3 per year)(January, April, July)

General

Report in with customer representative.

Record and report abnormal conditions, measurements taken, etc.

Review customer logs with the customer for operational problems and trends.

Provide email and hard Copy of Annual PM Report

PM Reports must show Exact Equipment Label (Tag and Serial #), Plant, Location.

Inspect location and mounting of monitor.

Inspect sensor.

Check with equipment operation logs for unit history.

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CHILLER (CENTRIFUGAL) PM & INSPECTION

Eddy Current Testing (Every 3 years - January of 2028)

Perform Eddy Current test for All Chiller Evaporators/Condensers for Fiscal year 2028 (Every Three Years)
Provide detailed Hard and Email copy Eddy Current testing with Annual Inspection report
Eddy Current testing paperwork broken down to each plant and site.
Compare and Provide in report any loss in tube thickness from previous Eddy Current Test.

Annual Inspection & Maintenance(April)

Report in with customer representative.
Record and report abnormal conditions, measurements taken, etc.
Review customer logs with the customer for operational problems and trends.
Provide email and hard Copy of Annual PM Report
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Refrigerant Circuit

Check and record refrigerant level.
Inspect for leaks.
Calculate refrigerant lost and report to the customer.
Repair minor leaks as required (e.g. valve packing, flare nuts).

Brush Condenser Tubes using Brush designed for Enhanced Tubes(Patriot Brush, Its red white and blue).
Provide detailed and labeled pics of before and after cleaning. End Bell included.
Visually inspect condenser tubes for cleanliness.
Check vanes for free and smooth operation.
Check mechanical linkages for wear.
Adjust refrigerant level with customer's refrigerant.
If purge minutes show sign of a leak perform a complete leak test on chiller with electronic detector.
Tighten flange nuts, bolts, when appropriate.
Vibration Testing - April/May
Change Oil and Filter subject to oil analysis test results.
Provide Oil Analysis and report from Certified Laboratory (October)
Inspect/Replace Anode

Purge System

Check purge unit controls for proper operation.
Check and clean purge drum as required.
Clean the condenser coil.

Clean strainers or replace filters as required.
Check the purge compressor assembly for leaks as required.
Check the purge unit for proper operation.
Inspect and report on operating conditions.
Confirm purge compressor effectiveness.
Internal purge condenser inspection and cleaning (includes new gaskets), when applicable
Inspect purge float, adjust if needed.
Clean purge sight glass (includes new gaskets), if removable.
Inspect, adjust solenoid valve, air relief oil separator.
Perform leak test on purge system.

Controls and Safety

Verify all settings in the electronic control panel.
Inspect the control panel for cleanliness.
Inspect wiring and connections for tightness and signs for overheating and discoloration.
Verify the operation of the vane control system
Verify the working condition of all indicator/alarm lights and LED/LCD displays.
Verify the operation of the oil sump temperature control device.
Test operation of chilled water pump and condenser water pump starter auxiliary contacts.

Lubrication System

Pull oil sample for spectroscopic analysis.
Check oil for acid content and discoloration. Make recommendations to the customer based on the results of the test.
Measure and record the oil pump voltage and amperage.

Verify the operation of the oil heater. Measure amps and compare readings with the watt rating of the heater.
Change the oil filter.
Verify the oil level.
Tighten terminal on oil pump motors and heaters.
Replace factory mounted refrigerant filter.
Inspect and report on conditions of oil pump, oil cooler, oil heater.

Motor and Starter

Clean the starter and cabinet.
Inspect wiring and connections for tightness and signs of overheating and discoloration.
Check condition of the contacts for wear pitting.
Check contactors for free and smooth operation.
Check the mechanical linkages for wear, security, and clearances.
Check tightness of the motor terminal connections.
Meg the motor and record rating.
Verify the operation of the electrical interlocks.
Confirm proper compressor/motor transition time.

VFD

Vacuum dust from PC boards and internal parts.
Clean filters, blow out if needed.

Visually inspect all power connections.
Inspect/Tighten all electrical connections.
Verify cabinet fan operation.
Verify all start/stop contacts.
Verify supply voltage and phase sequences are correct.
Verify speed command for auto operation.
Start/stop vfd in manual operation.

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Quarterly Inspection & Maintenance (3 times a year)(October, January, July)

Report in with customer representative.
Record and report abnormal conditions, measurements taken, etc.
Review customer logs with the customer for operational problems and trends.
Provide email and hard Copy of Annual PM Report
PM Reports must show Exact Equipment Label (Tag and Serial #), Plant, Location.

Check the general operation of the unit.
Log the operating temperatures, pressures, voltages, and amperages.
Check the operation of the purge unit.
Check the operation of the control unit.
Check the operation of the lubrication system.
Check the operation of the motor and starter.
Analyze the recorded data. Compare the data to the original design conditions.
Review operating procedures with operating personnel.

Provide a written report of completed work, operating log, and indicate any uncorrected deficiencies detected.
Controls: Inspect, calibrate, test safety controls: log cut-in, cut-off points.
Refrigerant/Lubrication Circuits: Adjust refrigerant level with customer's refrigerant, if available.
Compressor/Motor Assembly: Megger main compressor motor, log tighter terminals.

MISC:

Check for proper flows through chiller.
Vibration analysis.
Inspect sight glasses, log levels.
Log amperages/voltages/temperatures/pressures.
Inspect thermometers/gauges.
Analysis of log readings by factory trained service technician, report on unusual conditions.
Generate reports on problems and conditions: log readings and compressor oil.
Condenser tube brushing once annually.

VFD

Vacuum dust from PC boards and internal parts.
Clean filters, blow out if needed.
Visually inspect all power connections.
Inspect/Tighten all electrical connections.
Verify cabinet fan operation.
Verify all start/stop contacts.
Verify supply voltage and phase sequences are correct.
Verify speed command for auto operation.
Start/stop vfd in manual operation.

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CHILLER (SCREW) PM & INSPECTION

Annual Inspection & Maintenance-(One per year - April)

Record and report abnormal conditions, measurements taken, etc.
Review customer logs with the customer for operational problems and trends.
Provide email and hard Copy of Annual PM Report
PM Reports must show Exact Equipment Label (Tag and Serial #), Plant, Location.

Inspect for Refrigerant and Oil Leaks.
Inspect for vibration eliminators and water piping for leaks.
Check Freeze Protection, evaporator and piping heaters.
Check and clean water piping strainers. HHW - August, CHW - January.
Check refrigerant in sight glass.
Check Compressor oil presence in sight glass, if applicable.
Change oil and oil filter subject to oil analysis report
Provide lab analysis and report of oil test.
Check and record liquid line filter drier pressure drop.
Inspect and tighten electrical connections.
Check relays and operating/safety controls.
Inspect components for signs of overheating or deterioration.
Check contactors for pitting and replace as needed.
Check crankcase heater operation.
Meg Hermetic Motor.
Perform Compressor vibration test.
Check operation of electronic expansion valve.
Perform Micro Tech check, log, fault analysis, analyze performance.

Check condenser Coils, clean debris from around condenser.
Clean condenser coils.
Check Condenser fan operation.
Check and record water side pressure drop across vessel.
Review chiller operation with onsite contact.

VFD

Vacuum dust from PC boards and internal parts.
Clean filters, blow out if needed.
Visually inspect all power connections.
Inspect/Tighten all electrical connections.
Verify cabinet fan operation.
Verify all start/stop contacts.
Verify supply voltage and phase sequences are correct.
Verify speed command for auto operation.
Start/stop vfd in manual operation.

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Quarterly Inspection & Maintenance-(3 per year)(October, January, July)

Inspect for Refrigerant and Oil Leaks.
Inspect for vibration eliminators and water piping for leaks.
Check and clean water piping strainers.
Check Compressor oil presence in sight glass, if applicable.
Check Condenser Fan operation.
Inspect and tighten electrical connections.
Check relays and operating/safety controls.
Check crankcase heater operation.
Perform Micro Tech check, log, fault analysis, analyze performance.
Check condenser Coils, clean debris from around condenser.
Clean condenser coils in early morning hours (May, June, July).
Review chiller operation with onsite contact.

VFD

Vacuum dust from PC boards and internal parts.
Clean filters, blow out if needed.
Visually inspect all power connections.
Inspect/Tighten all electrical connections.
Verify cabinet fan operation.

Verify all start/stop contacts.
Verify supply voltage and phase sequences are correct.
Verify speed command for auto operation.
Start/stop vfd in manual operation.

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EXHIBIT B

COOLING TOWER PM & INSPECTION

ANNUAL INSPECTION & MAINTENANCE(January)

Report in with customer representative.
Record and report abnormal conditions, measurements taken, etc.
Review customer logs with the customer for operational problems and trends.
Provide email and hard Copy of Annual PM Report
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General Assembly

Clean debris from platform and surrounding area.
Check and clean bleed line and overflow.
Check sump heaters and thermostats for calibration and proper operation. **(October & January)**
Inspect general tower condition for water treatment problems.
Inspect drive belts, check and tighten if required.
Inspect bearings, lubricate when required. **(Evapco Cooling Towers require Greasing every 45 days)**
Inspect motors.
Inspect tower fill for deterioration.
Inspect for dust and dirt, wipe down motors and moving parts as required.
Inspect fans for balance/vibration.

Structure

Disassemble all screens and access panels for inspection.
Inspect the conditions of the slats, if applicable.
Inspect the condition of the tower fill.
Inspect the condition of the support structure.
Inspect the condition of the basins (upper and lower) and/or spray nozzles.

Verify clean basins and strainer(s).
Verify the condition and operation of the basin fill valve system.

Mechanical

Inspect gear box for leaks.
Inspect drive and coupling for condition and security.
Inspect fan assembly for condition, security, and clearances (e.g. blade tip clearance).

Lubrication

Lubricate motor bearings.
Check gear box oil level. Marley Cooling Towers require gear box oil to be changed every 5 years. Most recent oil change will be completed in Summer 2025.

Motor and Starter

Clean the starter cabinet.
Inspect wiring and connections for tightness and signs of overheating and discoloration.
Check condition of the contacts for wear and pitting.
Check contactor(s) for free and smooth operation.
Meg the motor and record reading.
Check disconnect terminal block for wear, tightness and signs of overheating and discoloration.
Check the condition and operation of the basin heater.

VFD

Vacuum dust from PC boards and internal parts.
Clean filters, blow out if needed.
Visually inspect all power connections.
Inspect/Tighten all electrical connections.
Verify cabinet fan operation.
Verify all start/stop contacts.
Verify supply voltage and phase sequences are correct.
Verify speed command for auto operation.
Start/stop vfd in manual operation.

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Check the general condition of the tower.

Check sump heaters and thermostats for calibration and proper operation. (January)

Verify clean basins and strainers (upper and lower) and/or spray nozzles.

Verify proper water level in the basin.

Verify proper operation of the water level control device.

Verify smooth operation of the fan(s).

Verify proper operation of the bypass valve(s), if applicable.

Verify operation and Inspect Solid Separator System, if applicable.

Verify Operation and Inspect Cooling Tower Sump Basin Sweeper System, if applicable.

Review operating procedures with operating personnel.

Provide a written report of completed work, operating log, and indicate uncorrected deficiencies detected.

Inspect drive belts.

Inspect bearings, lubricate when required.

VFD

Vacuum dust from PC boards and internal parts.

Clean filters, blow out if needed.

Visually inspect all power connections.

Inspect/Tighten all electrical connections.

Verify cabinet fan operation.

Verify all start/stop contacts.

Verify supply voltage and phase sequences are correct.

Verify speed command for auto operation.

Start/stop vfd in manual operation.

Review customer logs with the customer for operational problems and trends.

Provide email and hard Copy of Annual PM Report

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