

## Specifications Generator Maintenance

Location:  
Morgan County Correctional Complex  
541 Wayne Cotton Morgan Drive  
Wartburg, Tennessee 37367

Facility Contact:  
Marty LaRue, Facilities Maintenance Manager  
[Marty.E.LaRue@tn.gov](mailto:Marty.E.LaRue@tn.gov)  
(423) 346-1423

### GENERAL SCOPE OF CONTRACT

To provide scheduled and emergency repairs on the engines, fuel tanks, transfer switches, and all electrical components in the switchgear room, I.E., breakers, relays battery bank, battery charger, PCL's, computer, indicator lamps, etc. On the facility's emergency generator systems.

### EQUIPMENT LIST:

Two Kohler diesel 7200/12470 volt generators model 2800reozd, two Kohler dec 550 controller voltage regulators, switchgear room, remote annunciator panel located in central control, two 7000 gallon UL 142 subbase fuel tanks, one Kohler natural gas 120/208 volt generator model 100rzg, Kohler battery charger model d-292863, and two ASCO series 300 automatic transfer switch located behind the armory, one Kohler propane 120/240 volt generator model 24rcla, and one Kohler RTX automatic transfer switch located at the K-9 facility which provides emergency electrical power to the facility during the loss of commercial utility power.

ALL REPAIRS AND PREVENTIVE MAINTENANCE MUST BE PERFORMED WITHIN MANUFACTURER'S SPECIFICATIONS.

**QUARTERLY SERVICES** – Diesel, Propane, and Natural Gas Engines when applicable.

#### 1. FUEL SYSTEMS:

- A. Drain water and sediment from fuel filter canisters and filter elements.
- B. Ensure proper operation of transfer pump.
- C. Ensure proper operation of solenoid valve.
- D. Ensure proper operation of fuel gauge and vent.
- E. Ensure all fuel line fittings are tight.

- F. Check and adjust carburetor choke.
- G. Drain water separators.
- H. Perform an overall inspection of all fuel components and ensure no leaks are present.

**2. LUBRICATING SYSTEM:**

- A. Check and fill engine oil level to proper level, facility provided.
- B. Fill 30-gallon autofill oil reservoir tank to proper level.
- C. Check and record engine oil pressure.
- D. Check engine for oil leaks.

**3. COOLING SYSTEM:**

- A. Check all cooling system hoses and connectors for proper tightness.
- B. Check and fill coolant to proper level, facility provided.
- C. Check freeze protection point and ensure it is 0 and below – add antifreeze if required.
- D. Check condition of fan belts – replace as needed when showing signs of wear or dry-rot.
- E. Check and record operating temperatures of the fan shaft and shaft pillow block bearings.

**4. HOTFLOW MODEL CSM 11058-000 COOLANT BLOCK HEATER SYSTEM:**

- A. Check O-Rings and gaskets for proper seal on control box.
- B. Check control box for moisture and add desiccant packets if moisture is found.
- C. Ensure recirculation pump is working properly.
- D. Check all plumbing connections for leaks and tighten connections.
- E. Ensure all electrical connections are tight and free of corrosion.
- F. Ensure all connectors to the circuit board are firmly seated.
- G. Check and tighten all mounting bolts.

**5. EXHAUST SYSTEM:**

- A. Check for exhaust leaks.
- B. Check and repair insulation if needed.
- C. Drain Condensate trap.

**6. AIR INTAKE SYSTEM:**

- A. Check air inlet piping for leaks and tighten all connections as needed.
- B. Remove, clean, and check condition of air filter element.
- C. Note and inform facility representative if air filters need replaced during the next service.
- D. Drain airbox.

**7. ENGINE ELECTRICAL STARTING SYSTEM AND KOHLER BATTERY CHARGER MODEL D-292865:**

- A. Clean battery terminals and cables and ensure no corrosion is present.
- B. Service engine batteries as required by manufacturer for jell type batteries and/or

add distilled water to maintain proper electrolyte level.

- C. Check and record cold cranking amps of each battery.
- D. Check and record battery specific gravity and charge state.
- E. Check and record battery voltage of each battery.
- F. Check and tighten all DC electrical connections.
- G. Check and tighten all connections between batteries and ignition.
- H. Check and tighten all connections for the alternator.
- I. Check operation of charger and record charge rate.
- J. Ensure all connections inside the charger cabinet are tight and free of corrosion.
- K. Perform and indicator lamp test on the black control cabinet located in the generator compartment and replace lamps as necessary.

#### **8. ENGINE AND MOUNTING:**

- A. Visually inspect, lubricate, and tighten all engine mounts as required in the engine manufacturer's maintenance manual.
- B. Visually Inspect, Lubricate, And Check Governor Operation.
- C. Check for unusual conditions I.E., vibration, deterioration, leakage, high surface temperature, and/or excessive noise.

#### **9. CONTROL SYSTEM:**

- A. Check operation of all gauges and meters.
- B. Check operation of all controls.
- C. Check shutdown system.
- D. Verify proper operation of remote annunciator panel located in building B central control.

#### **10. GENERATOR:**

- A. Check main circuit breaker for operation (if applicable).
- B. Check transfer switch for proper condition and operation.
- C. Clean and tighten all connection as needed.

#### **11. SWITCHGEAR BATTERIES AND COMPONENTS:**

- A. Measure the specific gravity of the electrolyte solution in each cell of each battery. Provide documentation/spreadsheet showing the readings with the service ticket. Contract holder shall maintain and use this spreadsheet to compare all future readings to determine battery life and replacement schedule.
- B. Add distilled water to maintain proper electrolyte level.
- C. Inspect battery rack and repair any areas showing corrosion.
- D. Inspect cables, clean, and tighten all connections as needed.
- E. Check battery charger for proper operation per manufacturer requirements.

#### **12. AC ELECTRICAL SYSTEM:**

- A. Clean and tighten all power cable connections.
- B. Visually inspect, clean, and tighten connections on circuit breakers and fuses – do not break manufacturer's seals or internally inspect these devices.
- C. Check for wire abrasions where subject to motion.

**13. GENERAL:**

- A. Perform a facility load test for a minimum of 90 minutes not to include start up and shut down times to ensure generators are fully operational.
- B. Ensure control panel is in the automatic mode when test is complete.
- C. Provide a full report of the readings to the agency representative.
- D. Notify agency of any additional needed repairs and provide a written quote to the facility manager within 5 business days.
- E. Provide a written legible service ticket or electronic version to show all results of all required tasks.

**ANNUAL SERVICES – DIESEL, PROPANE, AND NATURAL GAS ENGINES WHEN APPLICABLE – ALL LABOR HOURS ARE PART OF THE ANNUAL SERVICE COST. REFER TO BELOW SERVICE GUIDELINES FOR REPLACEMENT PARTS AND FLUIDS.**

**1. FUEL SYSTEM:**

- A. Change fuel filters and/or elements.
- B. Pump off any water and sediment from fuel tanks.
- C. Inspect and drain water and sediment from secondary containment tank – make any needed repairs to tanks and tank seams.
- D. Check fuel pressure at all filter heads – common fuel rail pressure will be the same at every head.
- E. Add sufficient fuel additives to inhibit bacterial growth and eliminate condensation/water in fuel tanks – note brand and type of additive on service ticket.
- F. Inspect system for leaks.
- G. Drain water separator.
- H. Remove all used fluids and filters/elements from institution and dispose of per EPA requirements.
- I. Check injector pump for flow rate, pressure, and spray pattern – clean and make any necessary adjustments.

**2. LUBRICATING SYSTEM:**

- A. Change oil in engine – use 15W-40 in diesel engines and 10W-30 in natural gas engines.
- B. Change oil filters.
- C. Check and record engine oil pressure.
- D. Check engine for oil leaks.
- E. Check operation and top off auto-oil refill tanks.
- F. Perform a laboratory analysis on oil samples and provide written report on findings and oil sample results to the facility manager.
- G. Remove all used fluids and filters/elements from institution and dispose of per EPA requirements.

**3. COOLING SYSTEM:**

- A. Check engine water pump.
- B. Check all cooling system hoses – replace as needed when showing signs of wear or dry-rot.

- C. Check operation, clean, and lubricate all louvers.
- D. Clean external core of radiator/heat exchanger.
- E. Check coolant level – add antifreeze if required.
- F. Check and record freeze protection – add antifreeze if required.
- G. Add rust inhibitor to cooling system – note brand and type of additive.
- H. Check condition of fan and alternator belts – replace as needed when showing signs of wear or dry-rot.
- I. Check for adequate fresh air to engine.
- J. Check condition of fan hub.
- K. Check operation of water jacket heater.
- L. Check and record operating temperatures (verify that operating temperature is in the correct range).
- M. Test cooling system conditioner concentration (add if needed) – note brand and type of additive.
- N. Check and record operating temperatures of the fan shaft and shaft bearings and lubricate as needed.

**4. HOTFLOW MODEL CSM 11058-000 COOLENT BLOCK HEATER SYSTEM:**

- A. Clean interior of the heating tank and the heating element as required by manufacture.
- B. Spray inside the main control box with a moisture repellent for electrical connections as needed.

**5. EXHAUST SYSTEM:**

- A. Check condition of mufflers, exhaust lines, supports/connectors.
- B. Check condition of turbocharger (if applicable)
- C. Check exhaust for leaks.
- D. Drain condensate trap.
- E. Check for exhaust leakage.
- F. Check insulation for fire hazards.
- G. Check flexible connectors.
- H. Check for excessive back pressure.
- I. Check hangers and supports.

**6. ALTERNATOR:**

- A. Blow dust out of alternator with a low-pressure air compressor.
- B. Visually inspect and clean rotor and stator.
- C. Visually inspect bearing condition and replace as necessary.
- D. Visually inspect and clean exciter.
- E. Visually inspect and clean voltage regulator.
- F. Measure and record resistance readings of windings with insulation meter (megger with SCR assembly or rectifier disconnected).

**7. BATTERY CHARGER (SWITCH GEAR ROOM) “LA MARCHE” MODEL A12 B-15-130V-A1-96N-19116-CPN112714:**

- A. Blow out rectifier/inverter with a low-pressure air compressor.
- B. Make certain all connections are tight and free of corrosion.

- C. Perform a visual check on all internal components.
- D. Check front panel meters and alarms for accuracy.

**8. TRANSFER SWITCHES:**

- A. Perform general inspection of all components, clean and tighten all connections as needed – do not break manufacturer’s seals or internally inspect this device.
- B. Adjust voltage-sensing device/relay – follow procedures indicated in the engine manufacturer’s maintenance manual – do not break manufacturer’s seals or internally inspect this device.
- C. Adjust voltage-sensing device-relay – follow procedures indicated in the engine manufacturer’s maintenance manual – do not break manufacturer’s seals or internally inspect this device.
- D. Note the delay time of startup and shutdown on service ticket.

**9. GENERAL:**

- A. Check for unusual conditions I.E., vibration, deterioration, leakage, high surface temperature, and/or excessive noise.
- B. Check and test all transfer switches.
- C. Check battery charger operation.
- D. Check and test all annunciator switches.
- E. Check the connections between the DVR 2000E and the system and ensure they are clean and tight.
- F. Perform a facility load test to ensure generators are fully operational.
- G. Ensure control panel is in the automatic mode when test is complete.
- H. Provide a full report of the readings to the Facility Manager upon completion.
- I. Notify agency of any additional services needed by written legible service ticket.

**THREE YEAR SERVICES – DIESEL, NATURAL GAS, AND PROPANE ENGINES WHEN APPLICABLE – ALL LABOR HOURS ARE PART OF THE THREE-YEAR SERVICE COST, REFER TO BELOW SERVICE GUIDELINES FOR REPLACEMENTS PARTS.**

**1. GENERAL:**

- A. Replace fan shafts and bearings to prevent catastrophic failures.
- B. Replace all engine starting batteries in all generators per manufactures specification. Ensure required cold cranking AMPS are correct.
- C. Replace spark plugs and wires.
- D. Check and adjust valve clearance.
- E. Check bolt torque on all engine components.
- F. Perform an infrared scan on all electrical wiring systems within the switchgear room, capacitor cabinets, voltage regulators, generator, and provide a report of this scan to the Facility Manager. Contractor shall provide a repair cost quote for discrepancies found during the scan.
- G. Check relay contacts for pitting or corrosion.
- H. Calibrate all relays in switch gear cabinet.
- I. Check capacitors for leakage.

**LOAD BANK TEST – ONE PER GENERATOR – ONE PER DURATION OF CONTRACT – TIME OF**

**NEED SHALL BE DETERMINED BY FACILITY MANAGER – ALL LABOR HOURS AND EQUIPMENT REQUIRED TO PREFORM THIS TEST ARE PART OF THE SERVICE COST.**

- A. Provide load bank, transformer, power cables, and any additional parts/equipment required to perform a load bank test on each generator per manufacture requirements based on age and hours on generator.
- B. Provide documentation to facility manager from manufacture showing requirements prior to performing this test.
- C. Provide a full report of the tests to the facility manager upon completion.

**SERVICE GUIDELINES:**

- A. Emergency power supply system shall be maintained not less than the preventative maintenance schedule found in NFPA 110 2019 edition.
- B. Service provider shall utilize and adhere to all current manufacturer service manuals and bulletins. The successful vendor must provide copies of all new service bulletins and manual updates to the facility manager.
- C. Reference Materials:  
Institution owned Kohler Power Systems specification No. 16230 binder which includes operational manual TP-6200, Detroit Diesel OPS Manual M105555/005, and LA Marche Installation Manual and Type VR Vacuum Circuit.

**PARTS:**

- A. Repair parts are to be OEM or equal and must be pre-approved by the Facility Manager.
- B. Contract holder must provide a quote that includes manufacture, part number, part description, retail price, and retail price plus 15% mark-up for parts used.
- C. Contract holder must provide a written statement as to why parts failed if requested by Facility Manager.

**WORK TIMES:**

- A. Inspections and routine maintenance are to be performed between the hours of 6:30 AM to 2:30 PM EST Monday through Friday except on State holidays.
- B. Emergency repairs must be requested by the State and pre-approved by the Facility Manager. In the event of an emergency call out, contract holder must respond to the institution within 4 hours.
- C. The contractor must provide available office, shop, and cell phone numbers of personnel to contact for said services. An outside answering service and/or vice message system I.E. Electronic answering devices are not acceptable to the State as contact for emergency and/or non-emergency situations.
- D. Trip charges are limited to a single charge per round trip or per given purchase order unless given prior approval.
- E. The hourly rate for emergency and non-emergency service starts when the technician signs in at the Maintenance building and stops when the technician signs out.

**NOTE:**

ALL BIDDERS ARE REQUIRED TO MAKE A MANDATORY SITE VISIT TO BECOME



FAMILIAR WITH OUR GENERATORS, THEIR LOCATION, AND ANY PROBLEMS/UNUSUAL CIRCUMSTANCES THAT MAY EXIST. **BIDS WILL NOT BE ACCEPTED FROM ANY COMPANY WITHOUT VISITING THE INSTITUTION.**