



GEK 46074b  
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## **GE Power Systems** Generator

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# **Care of Generator During Shutdown**

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*These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes the matter should be referred to the GE Company.*

## I. INTRODUCTION

When planning the preparation of generator and associated equipment for a shutdown period, plan to disassemble and prepare the equipment only to the extent necessary to protect it during that period.

Only a moderate amount of preparation may be needed for generators exposed to clean, dry atmospheres and relatively uniform temperatures. Under such conditions, simply coat the surfaces of the parts to be protected with lubricating oil and ensure that all electrical insulation remains dry.

Occasional inspection is advisable to make sure that the proper condition is being maintained.

Where the generator will be exposed to relatively sudden or extreme changes in temperature, humid or salt-laden atmosphere, acid fumes or abrasive dust, more careful and extensive preparation may be required.

## II. PREPARING THE GENERATOR AT SHUTDOWN

- A. Lift collector brushes clear of the collector rings and leave in this position until operation of the machine is resumed.
- B. Coat collector rings with a film of light oil. Make sure that oil does not accumulate on the insulation adjacent to the rings.
- C. Drain the coolers completely.
- D. Coat all exposed shaft surfaces with a light lubricating oil.
- E. Keep the lubrication (and seals for a hydrogen-cooled unit) system in operation to provide continuous flushing.
- F. Prevent condensation of moisture on the generator windings. For air-cooled units, or hydrogen-cooled units which will be purged, the following methods may be used.
  - 1. Provide a small blower [5 cfm (2360 cm<sup>3</sup>/sec.)] minimum at six to eight inches (0.015 – 0.020 kg/cm<sup>2</sup> or 152.4 mm – 203.2 mm) of water pressure to circulate dry, heated air through the stator frame. On hydrogen-cooled units, set the blower on the end shield access opening and exhaust the air out the opening at the opposite end. For air-cooled units with lift holes, direct the flow from one side to the other in a diagonal direction. For air-cooled units without lift holes, access is made by lifting or removing two diagonally opposite coolers. Maintain the heated air 10 to 20°F (–12 to –7°C) above room temperature.
  - 2. Energize the heaters if they are installed or added. The optimum location is under the armature end windings; however, they should be at least 12 inches (304.8 mm) away from the winding.
  - 3. On hydrogen-cooled units that will not be purged, reduce the gas pressure about 0.5 psig (.035 kg/cm<sup>2</sup>) to minimize consumption. Nitrogen can be substituted for the hydrogen. Keep the seals in operation regardless of the gas selected, including air. If hydrogen is used, keep the bearing drain enlargement exhausters in operation.
- G. Add heaters or light bulbs in the collector area.

### III. PREPARING THE EXCITATION SYSTEM FOR SHUTDOWN

- A. Add heaters to each section of the excitation cubicle and keep the doors closed to prevent animals from gaining entrance.
- B. In high humidity areas, add heaters to the SCT and PPT enclosures.

### IV. PERIODIC MAINTENANCE AND CHECKS

- A. As indicated in the turbine instruction, turn the rotor assembly occasionally to ensure that the journals remain coated with oil. If possible, the generator rotor should be at rest with the pole axis in the vertical direction. This can be determined from the balance position numbers, which are 5 and 11 for the center line of the poles. Balance position numbers are stamped on the centering rings and fan hubs inside the unit and on either the main coupling or expansion recorder ring.
- B. Megger the field once a month per instructions, entitled “Insulation Testing,” located elsewhere in the main instruction book. Maintain records in order to monitor any downward trend. It will normally not be necessary to megger the armature winding unless the field megger is very low, as the field megger is usually a good indication of the amount of moisture inside the casing.
- C. Inspect exposed shaft surfaces and the collector rings to ensure that the oil film is adequate.
- D. Visually check all equipment occasionally to ensure that no unexpected events are occurring.

### V. PROCEDURE BEFORE STARTUP

- A. Remove the protective oil coating from the collector rings with mineral spirits. Make sure that solvent does not contact the insulation between rings.
- B. Replace the collector brushes.
- C. Remove the blower if one was used and remove all heaters that were not installed permanently. Remove any heaters added to hydrogen-cooled units.
- D. From this point, the procedure outlined in the instruction entitled “Operation” can be followed as applicable.



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