Division 263213
Packaged Engine Generator Systems
DESIGN GUIDE

1 General

1.1 Introduction

A. This section applies to the following:

1. Packaged engine generator sets

B. Generators provided for buildings on campus are permitted under a campus wide permit for air pollutants which has limitations for adding new generators on campus. The installation of a new generator on campus shall require prior approval by the CPPM and ELSM.

C. The campus utilizes a central generator for NEC 702 optional standby loads in the Science neighborhood. The existing campus generator and paralleling switchgear are located near the existing Jongeward facilities building. The use of the existing campus generator for new NEC 702 optional standby loads requires a load analysis feasibility study by the designer and approval by the ELSM.

D. Generators shall be located outdoors on grade. Provide convenience receptacle within 25 feet of the generator location.

E. Where a new generator has been given approval by the CPPM and ELSM, they are generally used to supply loads as follows:

1. NEC 700 - Life safety systems

1) Egress & exit lighting

2) Fire alarm

2. NEC 701 - Legally required standby systems
    1) Elevators
    2) Smoke control
    3) Stair or Shaft pressurization
3. NEC 702 - Optional standby systems
    1) Security
    2) Communications equipment
    3) HVAC systems
        a) Heating water pumps
        b) Steam condensate pumps
        c) Temperature controls & BAS
        d) IT room cooling
        e) Piping heat trace
    4) Plumbing Systems
        a) Domestic booster pumps
        b) Hardwired faucets and flush valves
        c) Sump pumps
        d) Sewage ejectors
        e) Piping heat trace

2 Materials

2.1 General

A. Manufacturers: Caterpillar, Onan, or approved equal.

B. The generator set, the automatic transfer switch and all accessories shall be furnished as a complete system to insure single source responsibility.

C. Engine generator system shall be provided in a sound attenuating weatherproof enclosure for operation outdoors.

D. The generator set shall have communication to the building management system for monitoring of generator status.

2.2 Packaged Engine Generator System

A. NFPA 110, engine generator system to provide source of power for NEC 700, 701 & 702 applications.

B. The engine/generator shall be capable of starting the connected loads with a voltage dip of no greater than 25% when the load is applied in steps, each spaced 1 second apart, as follows:

1. Step 1: NEC 700 Emergency Transfer Switch
2. Step 2: NEC 701 Legally Required Standby
3. Step 3: NEC 702 Optional Standby Transfer Switch

C. Mounting: Provide unit with suitable rubber vibration isolators and mount on structural steel base.

D. Housekeeping Pad: Provide concrete housekeeping pad to elevate equipment a minimum of 6” above the surrounding finished grade. The intent of this requirement is to improve the accessibility and use of the generator oil drain plug. Pad to extend maximum 2” beyond outside dimensions of the equipment enclosure.

2.3 Fuel System

A. Primary fuel system shall be one of the following:

1. Natural Gas with propane back up. Provide 90-minute LP storage tank. Provide automatic fuel switchover valve and engine mounted vaporizer.
2. Diesel with minimum 24 hours of fuel storage.

3. Alternative fuel sources can be submitted for approval by the ELSM.

2.4 Accessories

A. Remote annunciator panel

B. Battery charger

C. Block Heater

3 Execution

3.1 Installation

A. The generator skid base shall be located on a housekeeping pad which extends a minimum of 6” above finished grade to allow access to the oil drain line.

B. Provide all necessary control wiring between the generator set and the automatic transfer switch.

C. Provide control circuits from the generator set to the generator annunciator panel(s).

D. Provide equipment grounding connections.

E. Train Owner’s building maintenance personnel in procedures for starting-up, testing and operating engine-driven generator sets.

F. Simulate power outage by interrupting normal source, and demonstrate that system operates to provide emergency and standby power.

G. Provide minimum of (1) 120V convenience receptacle within 25 feet of the generator location.

3.2 Adjustment and Testing

A. Tighten connectors and terminals, including screws and bolts, in accordance with equipment manufacturer’s published torque tightening

values for equipment connectors. Check tightness of bolted connections using calibrated torque wrench per manufacturer's instructions. Record date and torque values and include in O&M manuals.

4 Appendix

4.1 Reserved for future.