

## Construction Inspections:

### NFPA 110, Emergency and Standby Power Systems:

#### Required to be provided by contractor:

1. Copy of Approved (shop drawing) Plans shall be on job site.
2. Equipment needed to accomplish test.
3. A copy of the manufacturer's design, installation, and maintenance manual.
4. Representative(s) to operate equipment.
5. Copy of the Acceptance Test Report. (Copies for AHJ, Customer and Installer at minimum)

#### The installing contractor shall:

1. Notify the AHJ and the property owner or the property owners representative of the time and date testing will be performed. [110:7.13.3]
2. Perform all required acceptance tests.
3. Complete and sign the appropriate contractor's material and test certificates.
4. Provide items below to the AHJ at the time of the test:
  - A. Evidence of the prototype test as specified in 110:5.2.1.2 (level 1 systems only)
  - B. A certified analysis as specified in 110:5.6.10.2.
  - C. A letter of compliance as specified in 110:5.6.10.5
  - D. A manufacturer's certification of a rated load test at rated power factor with the ambient temperature, altitude, and fuel grade recorded. [110:7.13.4.6 (1) through (4)]

#### Acceptance Test List:

1. On-site Installation Acceptance Test [110:7.13.1] [110:7.13.2]
2. Full Load Test [110:7.13.4]
3. Cycle Crank Test [110:7.13.4.4]
4. Safeties test [110:7.13.4.5]
  - I. Control Functions [110:5.6.5]
  - II. Remote Controls and Alarm(s) [110:5.6.6] *Exception: Where manufacturer has tested and documented over-crank, high engine temperature, low lube oil pressure and over-speed safties prior to shipment. Provide documentation to AHJ.*

### NFPA 110, Emergency and Standby Power Systems:

#### Installation Acceptance of Emergency and Standby Power Systems.

1. Upon completion of the installation of the Emergency Power Supply System (EPSS), the EPS shall be tested to ensure conformity to the requirements of the standard with respect to both power output and function. [110:7.13.1] An on-site acceptance test shall be conducted as a final approval test for all EPSS's. [110:7.13.2] The test shall be conducted after completion of the installation with all EPSS accessory and support equipment in place and operating. [110:7.13.2.2]
2. The EPSS shall perform within the limits specified in NFPA 110. [110:7.13.4]
3. The AHJ shall be given advance notification of the time at which the acceptance test is to be performed so that the AHJ can witness the test. [110:7.13.3]

4. The on-site installation acceptance test shall be conducted IAW 110:7.13.4.1.1 through 110:7.13.4.1.3. [110:7.13.4.1]
  - A. In a new and unoccupied building or facility, with the prime mover in a cold start condition and the emergency load at operating level a normal power failure shall be initiated by opening all switches or circuit breakers supplying the normal power to the building or facility. [110:7.13.4.1.1]
5. After completion of the test in 110:7.13.4.1 the prime mover shall be allowed to cool for not less than 5 minutes. [110:7.13.4.2]
6. A load shall be applied for a 2-hour, full load test. The building load shall be permitted to serve as part or all of the load, supplemented by a load bank of sufficient size for provide a load equal to 100 percent of the nameplate kW rating of the EP's, less applicable derating factors for site conditions. [110:7.13.4.3\*]
  - A. This full load test shall be initiated after the test specified in 110:7.13.4.1.3 by any method that starts the prime mover, and, upon reaching rated rpm, picks up not less than 30% of the nameplate kW rating for the first 30 minutes, not less than 50% of the nameplate kW rating for the next 30 minutes, and 100% of the nameplate kW rating for the next 60 minutes, less applicable derating factors for the site conditions. [110:7.13.4.3.1\*]
  - B. A unity power factor shall be permitted for on-site testing, provided that rated load tests at the rated power factor have been performed by the manufacturer of the EPS prior to shipment. [110:7.13.4.3.2] Provide documentation to AHJ.
  - C. Where the EPS is a parallel multi-unit EPS, each unit shall be permitted to be tested individually at its rating. [110:7.13.4.3.3]
  - D. The data specified in 110:7.13.4.1.3(4) through (9) shall be recorded at first load acceptance and every 15 minutes thereafter until the completion of the test period identified in 110:7.13.4.1.3(10). [110:7.13.4.3.4]
7. Any method recommended by the manufacturer for the cycle crank test shall be utilized to prevent the prime mover from running. [110:7.13.4.4]
  - A. The control switch shall be set at "run" to cause the prime mover to crank. [110:7.13.4.4.1]
  - B. The complete crank / rest cycle specified in 110:5.6.4.2 and 110:T.5.5.4.2 shall be observed. [110:7.13.4.4.2]
  - C. The battery charge rate shall be recorded at 5-minute intervals for the first 15 minutes or until charge rate stabilization. [110:7.13.4.4.3]
8. All safeties specified in 110:5.6.5 and 110:5.6.6 shall be tested on site as recommended by the manufacturer. [110:7.13.4.5]