Emergency electric power generator system

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Chapter 4 of NFPA 110 covers the Classification of Emergency Power Supply Systems (EPSSs). Many codes and standards refer to the class and type of EPSS as defined in NFPA 110. NFPA 110 does not determine which occupancies require a particular type, class, or level of EPSS. Rather, it recognizes two levels of classification:

Once the system is identified as either critical to life safety (Level 1) or less critical (Level 2), the design engineer or facility manager will be able to determine which requirements apply to that system.

It is important to note that NFPA 110 does not state which applications require the installation of a Level 1 or Level 2 EPSS, nor does it specify the loads to be connected to the EPSS (1.1.5). Other codes and standards (e.g. NFPA 101, Life Safety Code, and NFPA 99, Health Care Facilities Code) will dictate the appropriate level and requirements for a given occupancy. The authority having jurisdiction (AHJ) will interpret whether a Level 1 or Level 2 EPSS is required in a particular city or region.

In addition to Level, the categories used in classifying EPSSs include Class (minimum runtime) and Type (power restoration time). All three need to be specified in any project specification to ensure that the proper system configuration is quoted and supplied.

Class defines the minimum time, in hours, for which the EPSS is designed to operate at its rated load without refueling. (4.2) Most commonly specified are: Class 48 (minimum of 48 hours). Class X (other time, in hours, as required by the application, code, or user) may be interpreted differently by the AHJ, but it generally translates to 72 or 96 hours of rated output. (Table 4.1 (a) Classification of EPSSs)

Type defines to the maximum time, in seconds, that the EPSS is will permit the load terminals of the transfer switch to be without acceptable electrical power. (4.3). It refers to the number of seconds that the system has to be up and running and carrying the critical loads. For Level 1 EPSSs, all Level 1 loads need to be transferred to the EPSS in 10 seconds regardless of how large or how small the system is. This is known as a Type 10 designation. (Table 4.1 (b) Types of EPSSs)

The purpose of the NFPA 110 classification method is for designers to specify a system that is capable of providing a "source of electrical power of required capacity, reliability, and quality to loads for a length of time as specified in Table 4.1 (a) and within a specified time following loss or failure of the normal power supply as specified in Table 4.1 (b)" (4.1)

Watch this mtu 3,250 kW generator set start and assume full rated load in one step, in less than 10 seconds, as required by NFPA 110 Type 10.

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Learn more about the requirements of NFPA 110 and best practices for the installation and ongoing performance of backup power systems to ensure that they are able to provide a reliable source of electrical power in an emergency.

Learn more about what is covered by NFPA 110, who enforces compliance, and official definitions of terms used throughout the standard.

Learn more about the classes and types of Emergency Power Supply Systems (EPSSs) and how to apply the requirements of NFPA 110 for the application.

Learn more about the NFPA 110 requirements for specifying generator sets and accessories used to generate backup electrical power in an emergency.

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