Coffee Break Training - Fire Protection Series

Fire Pumps: Batteries for Diesel-Engine Drivers

No. FP-2011-48 November 29, 2011

Learning Objective: *The student shall be able to recite the requirements for batteries connected to diesel-engine fire pump drivers.*

Stationary fire pumps that use diesel-engine drivers may be required to have batteries for emergency starting.[1]

These batteries should be mounted on a rack above the floor where they will not be susceptible to flooding.

Batteries may be lead-acid type (as illustrated) or nickel cadmium if approved by the engine manufacturer's requirements. When batteries are used for diesel-engine drivers, there must be two battery units for each engine, and if an engine has two cranking motors it should have one cranking motor dedicated to each battery.

Batteries should be sized on a calculated capacity of 72 hours of standby power followed by three 15-second attempt-to-start cycles per battery unit, without alternating current power being available for battery charging. At 40 °F (4.4 °C), each battery unit should have twice the capacity needed to maintain the cranking speed recommended by the engine manufacturer through a 3-minute attempt-to-start cycle. The 3-minute cycle consists of six consecutive cycles of 15 seconds of cranking and 15 seconds of rest.

Essential electrical loads, including the engine, controller, and all combined pump equipment, should not exceed 0.5 ampere each for a total of 1.5 amperes on a continuous basis. Nonessential loads, such as emergency lighting or alarm systems, should not be powered from the engine starting batteries.

Storage batteries should be supported on a rack above the floor, protected from displacement, and located where they will not be subject to excessive temperature, vibration, mechanical injury, or flooding with water. Current-carrying parts should not be less than 12 inches (305 mm) above the floor level.

Batteries should be located where they are easily accessible for servicing, but not located in front of the engine-mounted instruments and controls.

For additional information, refer to National Fire Protection Association (NFPA) 20, *Standard for the Installation of Stationary Pumps for Fire Protection*, Chapter 11.

[1] Some diesel-engine drives are started by hydraulic or pneumatic methods.