



Coffee Break Training - Fire Protection Series

Fire Pumps: Reliable Power Sources for Electrically-Driven Fire Pumps

No. FP-2011-49 December 6, 2011

Learning Objective: The student shall be able to describe the evaluative criteria for a reliable source of electrical power to a fire pump.

Electrically-driven fire pumps must be provided with a normal source of power that is highly reliable so the pump will operate when needed. In many cases, the normal utility service or a private, onsite powerplant is the source of electricity for the fire pump installation. But how does one determine whether the power source is “reliable”?

National Fire Protection Association (NFPA) 20, *Standard for the Installation of Stationary Pumps for Fire Protection*, does not require that the normal power source be infallible. NFPA 20 provides the code official the following guidance for deciding whether the power source is reliable:

1. The power source has not experienced any shutdowns longer than 4 continuous hours in the year before the fire pump installation plans are submitted for approval. If the normal source powerplant has been intentionally shut down for longer than 4 hours in the past, it is reasonable to require a backup source of power.
2. Power outages, other than those caused by natural disasters or electric grid management (regional blackout), have not been experienced in the area of the protected facility. If the normal source of power fails under these circumstances, the fire protection system could be supplied through the fire department connection. However, if the power grid is known to have had problems in the past (e.g., switch failures or substation shorting), it is reasonable to require a backup source of power.
3. The normal source of power is **not** supplied by overhead conductors immediately outside the protected facility. According to NFPA 20, many utility providers will disconnect power to the facility during an emergency by physically cutting the overhead conductors which could mistakenly cut the power supplying the fire pump. Additionally, fire departments will never operate aerial apparatus near live overhead power lines, so if the normal source of power must be shut off a backup source of power is required.
4. Only the disconnect switches and overcurrent protection devices permitted by NFPA 20 are installed in the normal source of power. Power disconnection and activated overcurrent protection should only occur in the fire pump controller.

For additional information, refer to NFPA 20, Chapter 9.



Electrically-driven fire pumps like this horizontal split case require a reliable power source to drive the pump.



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