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From Experience

Three Key Considerations When Choosing Electric vs. Diesel Fire Pumps

There are five words that a client never likes to hear: “You need a fire pump.” Yet, as with many facilities, especially those with high-piled storage of commodities, the greater demand for fire sprinkler protection necessitates the installation of a fire pump to account for insufficiencies in the municipal water supply.

Once it is determined a fire pump is required, the next consideration is whether to install a diesel or electric fire pump. While the latter offers many benefits (e.g., lower cost, less maintenance, and decreased space requirements), other considerations may negate these benefits. Let’s look at three key items to consider in the electric vs. diesel decision-making process.

1. Reliable power is the first consideration when weighing the two options. The National Fire Prevention Association (NFPA)’s “Installation of Stationary Pumps for Fire Protection” (NFPA 20) and “National Electrical Code” (NFPA 70) provide insight into the requirements and specific definition for reliable power. (See Experience in Brief.) NFPA 20 and NFPA 70 require an alternate source of power (typically a generator) for an electric drive fire pump

when the normal source is not deemed reliable. A consultation with the local Authority Having Jurisdiction (AHJ) is advised to determine whether the available electric utility can be considered reliable. If there is not, a diesel fire pump is typically the better option, i.e., provide greater reliability.

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EXPERIENCE IN BRIEF

NFPA 20 defines a “reliable power” source as possessing four characteristics. 1) The source power plant has not experienced any shutdowns longer than 10 continuous hours in the year prior to submittal. 2) Power outages have not routinely been experienced in the area of the protected facility caused by failures in generation or transmission. 3) The normal source of power is not supplied by overhead conductors outside the protected facility. 4) Only the disconnect switches and overcurrent protection devices are installed in the normal source of power. Power disconnection and activated overcurrent protection should only occur in the fire pump controller.

2. Inspection, testing, and maintenance are the next key consideration. As detailed in the tables below, diesel pumps require significantly more attention from maintenance staff and qualified personnel.

Inspection/Testing		
	<i>Electric</i>	<i>Diesel</i>
Inspection	Weekly	Weekly
Churn (no flow) Test	Monthly	Weekly
Flow Test	Annually	Annually
Maintenance		
<i>Electric</i>	<i>Diesel</i>	
Monitoring of the electrical service.	Periodic refueling of the fuel tank to maintain it at 2/3 full.	
Checking for acceptable oil levels in the motor sight glass.	Confirming voltage readings on the engine batteries.	
	Examining the exhaust system.	
	Checking the cooling water supply for the engine heat exchanger.	
	Checking for sufficient oil levels/pressure in the engine.	
	Bi-annually exchanging the engine oil and oil filter.	

3. Footprint is another consideration. In buildings where space is a premium, an electric fire pump requires less space. In addition to the pump assembly and pump controllers within an electric fire pump room, a diesel fire pump also requires space for the fuel tank and battery pack.

These considerations must be carefully examined to evaluate the most appropriate fire pump for each project. Proper planning, coordination, and design will ensure that a proper selection is made.

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