Generator Specification Tips

CASHMAN Power Solutions CAT

Genset Specs: Careful Consideration Now Saves Changes Later

Specification of the proper unit and supporting hardware is the first, and one of the most important, of many steps in selecting and installing a complete and operational standby power system. As environmental regulations become more stringent, sufficient time spent developing specs will ensure an installation will fit the client's needs as well as minimize change orders as the construction and installation process progresses. Every genset application is unique, each requiring some customization. That customization process opens the door for change orders if specifications are not thorough.

List Minimum Functional Requirements

Specifications should list minimum functional requirements rather than specific units. However, these minimum functional requirements can be based on certain genset specifications, which helps Cashman Power Solutions better identify standard items that could work in the installation. This can lower project cost and help ensure parts availability long after the unit is installed.

Coordination of Tasks

Coordination between engineers is an important part of the spec development process. The gray areas of responsibilities between engineering firms, installers and end users or the interface between different suppliers are areas where items can be duplicated or forgotten.

For example, an electrical engineer may not specify a complete fuel transfer system, thinking that the job falls under another engineer's duties. Or both engineers may include one, and the contractors/suppliers end up with conflicting requirements. Ideally, an architect will be sure the structural, mechanical, and electrical engineers all address the genset installation. For example, the electrical engineer typically has primary responsibility for genset specification. However, if the unit is indoors and exhaust and fuel system and piping, room ventilation, and exhaust insulation designs are not addressed in the mechanical engineer's specifications, they are often overlooked and change orders ensue.

Redundancy

Equipment reliability is key to standby installations, but how much is too much? A standby generator system is an insurance policy and no two are alike. What is a loss of production worth to the owner? The cost of lost time, material or processes if standby power does not pick up the load should override project budget concerns. Simple and inexpensive redundant systems can result in huge savings in cost and inconvenience to a client.

Equipment Sophistication

Specifying equipment that offers self-diagnostic capabilities can be valuable to operators in the event of a system malfunction. These diagnostic tools can help spot the problem quickly, and more importantly, safely, before an actual outage occurs. Conversely, every item added to a standby system increases its complexity which inherently reduces its reliability. Keeping it simple wherever possible should be the goal.

Specify Tested Units

Specification of prototype-tested gensets should be standard practice. Generally, these are factory built and feature well researched components, and offer a definite advantage over units assembled from other manufacturers' components. Clients will be able to acquire parts and service years after the installation is completed when the right equipment is specified and installed.

Thorough start-up testing should also be specified. A load bank test should be required, large enough to handle all loads of the particular installation. Include realistic block load tests at 0 to 50% and 0 to 100% of the rating on the genset's name plate to ensure compliance with NFPA110. These block loads are most commonly experienced when standby units are called into operation. Similarly, realistic block load testing is the only way to assure the unit will meet the facility's needs once the unit is installed.

Fuel Usage

A spec should request maximum fuel usage rates, based on a specific fuel type at a specific operating load. Operating cost, particularly with prime power installations, can be dramatically affected in fuel usage is higher than claimed in spec sheet.

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Emissions

Engine emission data is becoming more important as the Environmental Protection Agency as well as state and local regulators enforce standards to minimize air pollution.

In larger cities, regulatory agencies have used engine emissions data to restrict genset running time. Manufacturers have emissions data for their diesel engines, and it should be required in the spec to be part of the submittals. Ensure gensets are certified to the appropriate emissions Tier Levels based on their date of manufacture. Note some manufacturers are providing oversized engine offerings at some ratings to be eligible for lower Tier Level standards. While this may save money up front, it wastes valuable space, it is not an environmentally responsible option, and could be considered a code violation by the local authority having jurisdiction.

Supplier Capability and Warranty

This is the most critical selection criteria for a emergency power system yet is usually overlooked. A contractor owes it to his ownership and employees to include his least expensive option in his bid to win work. His focus is on construction cost control and getting through the warranty period. The reality is a building is a 30-year investment. Therefore, the designer has a responsibility to his customer to ensure the equipment installed in his building will not only perform during startup, but will continue to do so for the life of the building. It should be specified the supplier is a company with a strong history of supporting such systems and projects with the financial strength to survive along with the equipment to support it for its entire useful life. Who hasn't searched in vain for a simple inexpensive part from a manufacturer who has been bought out or simply no longer exists? Cashman Power Solutions has been serving the industry for nearly 80 years with a reputation for exceptional products and even better service after the sale. Do your customer a favor and be sure you align them with a worthy partner. Some items to be sure to include in your specifications:

1. Supplier should have permanent facilities within a reasonable distance from the site. 50 miles is typical for most urban areas.
2. Supplier should have a full team of factory trained and certified technicians to support the equipment. They should be able to provide resumes of numerous technicians residing within the prescribed distance from the site demonstrating their qualities. They should be able to support multiple major repairs at one time. A single technician cannot be depended upon to be available when you need them most and he or she is already committed to another project.
3. Supplier should have a local parts supply with major components available on site. Waiting for days for parts can cost your customer millions of dollars in lost revenue and, potentially, a need for temporary rental equipment.
4. Supplier should have a fleet of rental generator sets capable of provision in case of extended downtime for major repairs. Further, they should be willing to provide such units at no cost to the owner during the warranty period if a failure will cause a system to be down longer than 24 hours.
5. Supplier should be able to provide a complete and working system. The genset is only a cog in the emergency power wheel. Automatic Transfer Switches, Paralleling Switchgear, and Uninterruptible Power Supplies should all be readily available from the same supplier. A customer doesn't want to try to figure out who to call if he has a problem – he wants to make one call for immediate contact with a responder capable of supporting the entire system to get him back up quickly.
6. The manufacturer should manufacture the engine and generator both. Why? That's the only assurance of long-term parts availability.
7. The manufacturer should have standby warranties for as long as 10 years from date of startup. These warranties should cover both parts and labor for the entire term. If a manufacturer covers "parts only" for example during that term, they don't have the faith in their own product you should expect and every failure will cost money.

Using the right supplier and manufacturer may be more expensive on bid day. However, we are all partners with our customers. Anyone involved in a construction project is a partner in that project for its entire useful life. A single source of responsibility for a mission-critical system isn't expensive – it's priceless.