

# Consultant's Corner: Assuring 10-Second Start Capability



## consultants corner

### Assuring 10-second start capability

When writing get set bid specifications that include 10-second starting capability, consider all the factors necessary to guarantee satisfactory performance of the installation.

*The following requirements assure 10-second starting:*

1. Cranking batteries must be adequately sized and fully charged. A trickle-charge system can ensure a consistent charge. When an air starter is specified, the air system must supply the required air volume and maintain a 100-psi (689.5 kPa) minimum pressure.
2. Combustion air temperature must be a minimum of 70 F (21 C).
3. A jacket water heater to maintain a minimum of 90 degrees F (32 degrees C) jacket water temperature.
4. A readily available supply of clean fuel.
5. The generator rotating members must not exceed the rotating mass of the standard Caterpillar generator.

### Minimize variables

Fuel quality and ambient temperatures are two variables out of your control once a gen set is commissioned. However, you can specify fuel and temperature requirements to minimize the impact of these variables.

Fuel quality is not generally a cause of problems in North America, but minimum quality standards should be included in your specifications, as outlined under Construction Specifications Institute (CSI) 105.000. Caterpillar engine can be operated on a variety of fuels, including natural gas.

Preferred fuels include a variety of distillates, such as No. 1 and No. 2 fuel oil, No. 1-D and No. 2-D diesel fuel oil, per American Society for Testing Materials (ASTM) D396-80 and D975-80, respectively. A complete profile of fuel standards is outlined in Engine Data Sheet 60.1 and available through our service department for your reference.

Clean fuel meeting Caterpillar's fuel recommendations will provide your customer with outstanding engine service life and performance. ASTM D613 includes standards on a fuel's cetane number, which is a measure of the ignition quality of fuel oil. Cetane numbers, based on American Petroleum Institute (API) gravity and mid-boiling point of a fuel, are available on the ASTM D975 cetane index. Caterpillar engines require cetane numbers in the range of 35 to 40.

In areas where fuel quality is less certain, fuel analysis by lab sample may be helpful in determining the need for fuel additives and/or a water separator. We can provide fuel analysis services to further assure your customer satisfactory engine performance.

### Jacket water heaters

A jacket water heater may be specified in order to maintain coolant temperature of 90 degrees F (32 degrees C) (CSI 201.J10), and must be installed if ambient temperature drops below 70 degrees F (21 degrees C), to ensure 10-second starting. Heaters, either 240- or 480-volt AC single-phase powered, should include adjustable thermostats to allow for manual temperature control.

### Call us for assistance

We are ready to assist you in writing a specification that will assure your customer of trouble-free 10-second starting operation. If you have a bid in progress, or anticipate writing specifications for 10-second starting capability, please call us and allow us to assist you in the process.

We have the equipment, the expertise, complete preventive maintenance and service programs, and the dedicated professional staff to ensure your gen set specifications will provide anticipated performance.