Peace of Mind Comes with a Price Tag

By Paul Wohlrab, Reverso Pumps, Inc.

Every diesel standby power generator, every diesel storage tank, every belly tank in a remote location has the potential for one thing in common: eroded performance due to inadequate diesel fuel maintenance. If you're the one guy in a hundred who never has to address the condition of his fuel, congratulations. For the rest of us, the ramifications can be steep. It only takes six short months for diesel fuel to become jeopardized, thereby hindering generator performance and peace of mind when you need it most.

This is not your father's diesel fuel we're talking about. The new generation of diesel mandated by the EPA may be a good thing for the environment, but most end users remain uninformed, unaware, and unconcerned how the recent changes in the fuel's makeup will directly affect the operation of their machinery. The ongoing misconception that diesel fuel is "good for life" has been widely circulated and is universally false.

Contaminated (1) and polished (2) fuel.

You may be the proud owner of a tank full of problems right now. Some of the factors that accelerate aging of diesel include contact with zinc, copper, or metal alloys that contain these components, which may be found in dust particles. Water, of course, which allows the growth of fungus or bacteria, can enter your tank in a number of ways, with the most popular being via the fuel delivery process, and/or condensation. Water is also an unwanted byproduct of some of these infections, thus creating a cycle where more contaminate can grow. Microbial growth, commonly misidentified as algae, does not survive without water. So the main item to eliminate from your tank is water.

Condensation is present in most tanks simply because the tank "breathes" moist air as the temperature changes throughout the day, and cools during the night. Even if the tank is nearly full, a small amount of water with the right contaminates will start the process of infectious growth.

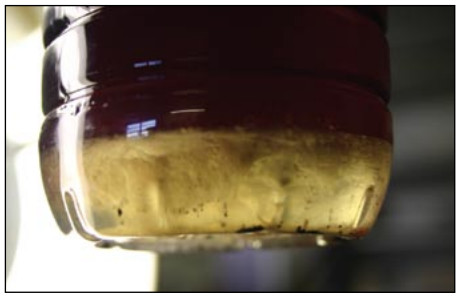
Most everyone that owns power generation equipment purchased the system for peace of mind and security. While each case is different, ask a small business owner how much he will lose if he cannot have power for a week. Many owners and managers have taken the time to understand at least the basics of their equipment operation, and an overall view of required and suggested maintenance. Most everyone who owns a diesel engine has read something about fuel, and some have studied in depth how newer common rail engines require fuel to be held to a more stringent specification. Yet NOT everyone maintains their fuel, and some use the following justification to explain their position:

"The generator runs for the half hour maintenance check each month with no problems."

That's good news—provided your emergency power is only called upon for 30 minute needs. When was the last time you ran it for 12 hours of continuous loaded duty, like a real power outage might demand? Did you refuel and run it another 12 hours or more? How old is the fuel you own today?

"I just put fuel in two years ago and it runs fine—and I have plenty of fuel filter elements if the tank is contaminated."

Again, this is good thinking to a point. Do you really have plenty of elements if you are shutting down and changing clogged elements every 20 minutes? If your power is off for a few days, this becomes an issue. Is there manpower allocated to changing all those elements?


Fuel contamination from the tank bottom.

Think of the flow of the fuel from your tank to the generator—it should pass through a diesel/water separator prior to reaching the two (in most cases) engine mounted filtration units for optimum protection. This allows the particulate and water to be removed in a decreasing micron range—typically 30 microns on the separator, then down to 10 then down to 2 is a popular progression. Having this configuration in place eliminates the issues associated with taking on a load of bad fuel during or immediately following an extended outage, since the first stage will remove the water and larger particles without the need to replace the engine filter elements.

"If I have a problem, I'll just call the guy."

OK, you have a guy to call, that part is commendable. If "your guy" is good, he has five to seven hundred other customers who may be calling during a prolonged power outage, so what number do you think you will be on his list of priorities? You may be fortunate enough to be in the top 50—or maybe not. Most repair facilities can respond quickly, but a tank full of bad diesel may not be easily resolved in an emergency like a major storm where replacement fuel supplies and complex repairs may become an issue.

"If my injectors blow out from bad fuel, the warranty will cover them."

It might be best to review your owner's manual. Many manufacturers will not cover bad fuel issues, and making repairs ▶

such as these in the middle of an area-wide emergency outage or other long-term situation could prove difficult. Consider that replacement parts typically need to be delivered, and delivery services may be curtailed as well, so your simple fuel issue may become something more difficult to resolve under these conditions. Additionally, the costs for major repairs seem to be more painful when they could have been simply avoided by some basic fuel maintenance steps. Correlate this reality with your original reason for purchasing the safety and security of a power generation system, and the issue should be clear.

"In this economy, maintenance is not a priority."

While this may not be an option for some critical needs facilities, many managers push maintenance down the list, right up to the point that the power goes out, and the generator only runs for a little while, and shuts down.

Again, if you are the guy to which none of the above apply....wonderful. So let's make sure you're really on the right track. Here are several ways to ensure your diesel engine will perform as expected when called upon:

In addition to normal start-up preventive maintenance of your generator, have your diesel fuel inspected/tested on a regular basis (for some applications this is required, not suggested). For instance, in critical need applications, NFPA 110 guidelines must be met annually. Your generator service organization will offer a fuel/tank testing service, or go on-line and find one in your area. If your fuel has been stored for several years with no maintenance, your tank may need to be cleaned. Once the fuel and tank are back to spec, there are several ways to keep it up to date. The key here is to do something, as time is not on your side in any case. If the system is brand new, or better still, just about to be installed, this is a great time to get your plan in place as there probably will be little or no corrective action needed.

Plan to have your tank cleaned and fuel polished with regularity, just like inspecting and replacing filter elements, belts or hoses. Some companies offer annual plans, some approach the task as an individual or "as needed" item—either way, get a schedule in place to ensure reliability. Additives are a popular alternative to physically polishing diesel fuel, and in some cases are a good supplement to the process. Ultimately, when the additive does its task well, the microbes are defeated—but they still sink to the bottom of the tank and may form sludge unless dealt with in a polishing process.

Ensure that your new shipment of diesel fuel is optimum prior to refilling your tank. This is only practical or even possible from some suppliers, and during an emergency, may not be practical from anyone. Getting a tank full of contamination can create an ongoing issue, so having a dependable, reliable, quality fuel supply source is imperative. One simple task is to perform a "clear and bright" visual inspection of the fuel before pumping it into your tank. Cloudy or sediment filled fuel should raise questions and may be cause to reject a shipment.

Be sure to use bio diesel compatible filtration components as you may not even be aware that you are using a bio diesel blend, which may in turn damage filtration systems that are not bio diesel compatible. There are plenty of articles about bio fuel in circulation to help identify what is being pumped into your tank. Be careful to comply with engine manufacturer specifications which vary from company to company. Most engine manufacturers allow up to 5% bio diesel blends without issue. Note that bio diesel may have a shorter life than standard diesel, depending on the composition. This further shortens the overall life of the diesel that may be stored in your tank.

In many situations, an emerging option is to install a permanently mounted fuel polishing system and primary diesel/water separator to keep fuel ready for use. This process is typically handled by your generator sales or maintenance company and can offer substantial savings vs. emergency repairs or a generator failure due to fuel problems. Once installed, scheduled generator run times can now include fuel maintenance, creating a more reliable unit. Depending on tank configuration, age of unit, quality of original fuel, etc, a permanently mounted fuel polisher can dramatically lower your cost exposure to fuel related problems, while dramatically improving your system reliability.

Take action. In an economically challenged operating environment, this is an easy obstacle to overlook. But, the downside could be disastrous. Ensure peace of mind and act now to safeguard your emergency operating environment for when you need it most. Now is a great time to solve this dilemma. The price tag is dependent on any number of issues: size of your tank, amount of contamination, difficulty of access, quality of the ongoing service organization. However, not acting may be easier to calculate—as soon as the power comes back on for your lights and calculator. ■

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