Are You Fuel-Ready?

6 Questions To Make Sure You Are Prepared For The Unexpected

Stored fuel is the life blood of business and government, yet it's also one of the things most taken for granted by those that need it the most. Out of sight, out of mind, it seems. Diesel fuel is purchased and kept in inventory in storage tanks, generators and emergency management systems, waiting for the time when it will be called upon to be used. The expectation is that when the need arises, the fuel is going to do what it's supposed to, and in turn, the engines and systems it powers will get the job done that they need to do.

So it can be a real shock **when stored fuel fails** to do what it's supposed to, when it's needed most. In fact, in an emergency, **fuel issues are the #1 cause of equipment failure**. That doesn't happen to those that are prepared. Easier said than done, though. How do you prepare for something like that?

This guide details **six essential questions** that you must have answers to, if your aim is to be **"Fuel Ready"** – to be as prepared as you can for future unexpected events when it comes to fuel storage and emergency preparedness. There's a lot of information out there, so the aim is to focus on some easy signs and steps that can lead you towards being better prepared in your arena.

Fuel Ready Question #1 – Have you checked your tank(s) lately?

Depending on what industry you're in, you might have requirements handed down to you that require storage tank inspection on a regular basis. But for many, storage tanks may go years without being looked into. And while those tanks are sitting there, problems with water and sludge and microbes are growing inside. The longer they stay undetected, the worse the consequences.

Check tanks for water and sludge at least quarterly. Use water paste and a tank stick to gauge water depth in storage tanks. If you don't want to do it yourself, contract out with a qualified group who can do it for you.

Fuel Ready Question #2 – When's the last time your fuel was tested?

Just as with storage tanks, you may already be subject to requirements to do fuel testing at given intervals. Hospitals and critical use facilities typically fall under these requirements. For everyone else, the most common stance is a reactive one – if you don't see problems in the present tense, everything is fine. You'll deal with problems if you come across them. On the other hand, fuel sampling, even if it's just once a year, goes a long way in identifying future problems and heading them off.

Without fuel testing, you have no sure way of knowing these critical problems exist.

Sample the fuel in each storage tank for testing at least once a year.

There are only a small number of tests that you need to pay attention to - the tests that tend to be required for critical use installations, meaning they are considered most relevant to ensuring that stored fuel will perform properly in essential situations.

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Where to have tests like these done? There are plenty of testing laboratories available that can do these tests with a pretty quick turnaround.

Seek to establish relationships with a service provider company that has existing relationships with certified labs.

Many times, such a partner can get the same tests done at a fraction of the normal "a la carte" cost you would have paid, and the company will also take care of packaging up the sample, submitting it for testing, and apprising you of the results.

Fuel Ready Question #3 – What can you expect if the fuel is bad?

Critical use facilities have certain specific fuel tests specified for them because there can be disastrous consequences if the fuel fails one or more of these specs while being called upon to perform in an emergency. Here are some of the most common ones:

Essential Test #1: Distillation

A test that measures the combustion properties of the stored fuel and ensures the fuel burns properly in the engine.

If the distillation curve of the stored fuel is off, the engine will run roughly, make black smoke, or may not even start at all.

Essential Test #2: Sulfur Content

Measure the sulfur content to ensure it does not exceed the legal limit. Off-road diesel used to be exempted from the 15 ppm sulfur cap applied to on-road fuel. That exemption has been phased out. Which means everyone, including municipalities and stored fuel professionals, will need to be monitoring the sulfur content of their stored fuel.

If the sulfur content is too high, it puts you at risk for violating environmental laws.

Essential Test #3: Water & Sediment

A test that documents the level of free water and sediment present in a fuel sample. Excessive levels of either one indicates the fuel is unstable and also prone to microbial contamination.

If the Water & Sediment test fails, the fuel is probably unstable and may not be useable. It will burn poorly in the engine, and create black smoke and harmful deposits in the engine and injectors.

Essential Test #4: Cetane Index

Measures the "combustion quality" of diesel fuel. Having the right cetane rating in diesel fuel is essential for any diesel engine to run properly at starting and in cold weather.

Inadequate cetane rating has significant effects on the running of the engine – rough and noisy operation, higher instances of black smoke. It also makes a diesel engine difficult to start, which is a death sentence for emergency generators and critical-use systems.

Fuel Ready Question #4 – Have you checked for microbes?

If you have microbes in your fuel tank, it's inevitable that you'll have big problems sooner rather than later. Fuel that's been sitting around for years, such as in limited-use backup generators, is virtually guaranteed to have significant microbial growth in those little-used storage tanks.

Microbial growth in fuel storage tanks is the single biggest cause of fuel problems and destroyed fuel quality. They plug filters, change the pH of stored fuel, and cause damaging tank corrosion. Any time you have water present in a storage tank, microbial growth isn't far behind.

Do a simple microbe dip test on a fuel sample once a quarter, to help head off destructive microbial growth in fuel storage tanks. If it comes up positive, take appropriate action. But be sure it's the right action to take if you want to solve the problem.

Fuel Ready Question #5 – Do you know the difference between mechanical and chemical solutions? And which one is best for you?

Mechanical

Vs.

Chemical

If the fuel is tested and it fails one or more of these essential measures, it's time to consider a solution. In the absence of defined testing, if you notice changes in the way your equipment runs, that also signals that it's time to look more closely at solutions. And if you have a positive microbe test, then you REALLY need to take action. But what action is the best to take?

Some people, like fuel polishers, insist that **mechanical solutions**, like filtering and polishing, are the only way to go. For them, fuel polishing will do anything – some have even claimed they can "polish" sulfur right out of diesel fuel. Other parties – we'll call them 'additive makers' – want you to believe anything and everything can be solved by some magic potion you add to the fuel. They advocate for a **chemical solution** only for whatever problem they see. To them, chemicals will solve everything.

The real truth is somewhere in the middle. Some problems respond very well to chemical treatment while other problems can only be solved by a mechanical fix. And there are other problems that need the **hybrid approach** – a combination of **both chemical and mechanical solutions** that work synergistically with each other to produce the best results.

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The "What To Do" Guide For Fuel Problems

If you have this: Poor cetane rating
Do this: ***Chemical solution*** – Add cetane improver to the fuel.

If you have this: Microbial growth in fuel or tank
Do this: ***Hybrid solution*** – Add biocide, circulate fuel mechanically to ensure complete kill.

If you have this: Excessive water & sediment
Do this: ***Hybrid solution*** – Pump out water, mop up remnants with chemical water absorber. Filter or polish out sediment to clean the fuel. Add fuel stabilizer and biocide at the end.

If you have this: Out-of-spec distillation reading
Do this: ***Mechanical solution*** – Get rid of the fuel (it may be contaminated)

If you have this: Sludge in the storage tank
Do this: ***Hybrid solution*** – Use chemical sludge dispersant, followed by polishing to clean the tank.

If you have this: Darkened or stratified fuel
Do this: ***Hybrid solution*** – Fuel polishing to remove solids, followed by treatment with stabilizers and biocide to protect fuel quality in storage.

Fuel Ready Question #6 – Do you have a partner to take care of the details if you're not confident you can do it yourself?

The diesel fuel that Fleet and Facility Managers rely on has changed dramatically in recent years, and so has the practice of maintaining fuel quality. New problems and solutions have evolved and forward thinking professionals now know that they must adopt a fuel-specific preventative maintenance program.

We understand that everyone is being tasked to do more with less. There are lots of different options to consider and getting it right is the only option. After all, it could be a matter of life and death!

What's The Solution?

Bell Performance is proud to introduce **the Bell FTS program**, a turnkey program utilizing best-of-breed chemical and mechanical technologies for fuel and tank maintenance. We can help implement a self-managed program or offer a fully out-sourced PM solution. We offer provide peace of mind against equipment damage, engine failure and general liability, and deliver the most cost effective approach, including an exclusive guarantee that your fuel remains in clean, stable and working condition.

You can trust Bell FTS to ensure that you're Fuel-Ready!

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