



A Highland Tank Fireguard® fuel storage tank at a critical facility.

www.highlandtank.com

STORAGE TANKS FOR STANDBY POWER

As our reliance on technology has increased, the demand for reliable quality power also increased.

Many industries, government, institutions, and businesses of all types and sizes mandate continuous uptime for all computer and network equipment to facilitate round-the-clock activities.

Continuous and uninterrupted power is the lifeblood of any of these “mission critical” facilities, especially ones that operate non-stop.

Storm-related power outages have shown the amount of instability that can exist within our power grid.

This has dramatically increased the focus on the need for stable power. With this in mind, owners of businesses that recognize the dependency on this infrastructure are investing in backup generation systems on a grand scale.

These systems may be designed to keep operations going for up to 72 hours with stored fuel or indefinitely with fuel deliveries. Owners of mission critical businesses are investing heavily in redundant and extremely robust backup generation and fuel storage systems. This investment is considered required insurance to protect against power outages.



Highland Tank HighGuard protected underground steel storage tanks for a data center.

Diesel-powered generators are widely used for emergency or standby power. These backup systems are designed into the overall electrical system for one of the following two reasons:

1. Legal Requirements – As required by the NEC, NFPA 101, NFPA 99, and other local, state, and federal codes and requirements. These are concerned with the safety of human life, protection of the environment, etc.

The need here is all-encompassing. Critical infrastructure and key resources, as defined by the Department of Homeland Security, include, “the assets, systems, and networks, whether physical or virtual, so vital to the United States that their incapacitation or destruction

would have a debilitating effect on security, national economic security, public health or safety, or any combination thereof.” Critical data might include military, judicial, and government records.

2. Economic Considerations – Continuous process applications often require a continuous electrical power source to avoid significant economic loss. In some cases, even a momentary loss of power can be disastrous.

Some business examples include financial, service providers, corporate, technology, insurance, and university/healthcare “data centers.”

Sensitive data includes medical records, social security numbers, financial transactions, cardholder data, intellectual property, and other confidential information.

Diesel Storage Tank Selection

There are two basic ways to store the diesel fuel required by diesel combustion engine generators. The large tank can be mounted remotely from the generator and installed either aboveground or belowground. In either case, the tanks must be double-walled and meet appropriate NFPA and EPA requirements. Additionally, remotely mounted storage tanks usually require a smaller receiving tank and fuel transfer pumps if gravity flow cannot occur between the tanks. These “day” tanks normally provide fuel for two hours of operation.

Typically, the above grade versus buried tank decision is driven by the corporate policy of the owner or engineering selection of the consultant. Highland Tank HighGuard fuel storage tanks are commonly used for below-ground installations. These large-volume, double-walled tanks combine the structural strength of steel tank construction and the lasting protection of a polyurethane coating to produce a high-quality storage tank second to none.

HighGuard’s heavy-duty protective coating is a two-component polyurethane coating system that provides permanent and effective corrosion protection for the life of the tank. HighGuard’s 75-mil coating is UL-1746 compliant and extremely resistant to surface damage due to impact or abrasion that may occur during transportation and installation.

For aboveground installations, Highland Tank’s UL 2085 Fireguard® storage tanks are typically used to provide fuel oil to emergency generators at mission-critical facilities. Fireguard® tanks are tough, thermally protected, double-walled steel storage tanks. They are used where a fire-protected tank is needed because of setback limitations or regulatory requirements.

Fireguards® pass Two-Hour Pool Fire, Hose Stream, Ballistics/Projectile, and Vehicle Impact tests, earning them the Underwriters Laboratories, Inc. UL-2085 label. Fireguard® Tanks are lightweight and come with a 30-year warranty. Each tank is constructed with a minimum three-inch interstice around the inner tank, which is filled with a lightweight, monolithic material. This high-efficiency insulation protects the inner tank in the unlikely event of a fire or extreme heat. It is porous to allow fluid migration through the interstice to the monitoring point.

The Fireguard® tank has proven itself in detailed Blast Effects Analysis. The aboveground storage tank was found to resist, with insignificant damage to the primary steel tank, the effects of a 50-pound man-portable improvised explosive device and a 500-pound vehicle-borne improvised explosive device at the standoff distances of 5 feet and 20 feet, respectively. When subjected to the load representative of a typical vapor cloud explosion, the tank also performed well. In fact, in all three scenarios, the Fireguard® tank is resistant to the effects of the blast loads considered.

Tank Sizing

Diesel generators can be conservatively estimated to have an approximate consumption rate of .1 gallons per KW per hour at 100% rated load. Most authorities will specify the minimum operating hours (based on facility occupancy) in the event of a failure of the normal power system. Based on the required or desired runtime, an estimated load to maintain capacity can be calculated and specified.

Another factor impacting the desired fuel storage tank capacity is the desired interval between fuel deliveries during a power outage (e.g., after a natural disaster where reliable fuel delivery or availability might be interrupted).



Highland Tank Fireguard® Tanks for Diesel Generator

Fuel Maintenance

Fuel maintenance is an important aspect of generator maintenance. Diesel fuel oil can degrade over time, separate, and even grow microbiological organisms. There are fuel additives available to mitigate the risk of this happening, especially if a diesel generator is running infrequently.

Any water at the bottom of the tank must be drained periodically. A fuel sample, taken from the bottom and the supply line, should be visually examined monthly. The fuel should look like new fuel; otherwise, it should be filtered or replaced.

Fuel tanks should be sized so that the fuel is turned over regularly. As a rule of thumb, diesel fuel should be turned over or replaced on an annual basis. A proper fuel maintenance program is important to ensure that the system operates properly during an emergency.

Stored fuel systems with diesel generators are proven the most reliable and feasible source of independent backup power. Unfortunately, many companies fail to consider installing backup diesel electric generators. When a major power outage occurs due to cascading and failure, an earthquake, or a storm, these companies end up taking a huge hit operationally and financially.

Contact Highland Tank to discuss our tank options for backup power at critical facilities. We are here to help.



Highland Tank HighGuard protected underground steel storage tanks for fuel storage.

Call 814-893-5701 today
or visit us at
www.highlandtank.com
for more information on our
storage tanks.

Contact: Robert Duppstadt
Email: rduppstadt@highlandtank.com

