

FREQUENTLY ASKED QUESTIONS

How have diesel generators changed? Didn't they used to smell bad and make a lot of noise?

Diesel has changed in major ways. Back in the day, diesel generators were something used in farming, construction, and transportation industries and it WAS loud and dirty. But because of its superior fuel efficiency and ability to outlast other types of generators by 20:1 - it was the clear choice.

Today, with the stringent emissions regulations that have been introduced, new "clean diesel" engine options are available that are perfectly suited for home power generation. The new engines don't smoke, smell bad or make a lot of noise. They deliver significant fuel and cost savings and can run nonstop for weeks at a time. And they now come in small compact designs that make them perfect for home use and many other applications.

How long can a diesel generator run?

The short answer? And the one that means the most to you and your family? 24/7 for 3 weeks non-stop. Think about what that means. A diesel generator ensures you will have power when you need it most. Diesel powered engines can work hard for extended periods as needed (up to 500 hours between oil and filter changes) and still outlast any other type of engine for a fraction of the operating costs.

The diesel generator gives you peace of mind. Generator engines that use natural gas, propane and gasoline are not designed to run for long periods of time. That's no good to you if you're away or can't gain access to your home. They use an incredible amount of fuel and are nothing more than a lawnmower or snow thrower type engine in a box. They are all air-cooled and run at very high speeds (think noisy) to make up for the lack of power they have.

How is the warranty coverage for a diesel generator engine different from others?

Great question. If you follow a normal maintenance schedule, there are NO restrictions. Our warranty covers you whether you're using it for portable power, at the cottage, at a camp or in an off-grid environment. Many companies limit the engine warranty, so it only covers emergency standby use. This is common with natural gas, propane and gasoline powered generators.

How did Aurora Generators get started?

They say that many great products come into existence out of necessity. That's what happened with us. During the Northeast Blackout of 2003, our family bought a generator from a big box store and it failed us - right when we needed it most. We wanted a product we could count on for safety, convenience and value. And so, we started designing diesel generators for home, off-grid and industrial use. Aurora Generators is privately owned and focused on customers - not shareholders.

GENERAL INFORMATION

What is a generator and what does it do?

A generator is a device for locally producing electrical energy on demand. This is mainly used as a backup to the main electrical supply. Some can automatically start and provide electricity for as long as the outage lasts. Other applications include commercial, construction, off grid backup or even prime. A generator consists of a mechanical engine and electrical alternator.

The engine is the mechanical drive source which powers the electrical alternator output source. Engines can either be gasoline, liquid propane, natural gas, or diesel. The alternator contains a rotating mass of copper (rotor) and a stationary magnetic field (stator). When the rotor spins within the magnetic field it produces electricity at the alternator terminals. This is, of course, a simplistic statement and many other processes and controls are required to produce stable electricity at the correct voltage and frequency.

Who uses a generator?

Our society has become increasingly dependent on electrical power for everyday needs such as; lighting, climate control, cooking, water, refrigeration, computers and home security which all need electricity to work properly. There are times when you could be without power for a few minutes, hours, days or even weeks. It could be an equipment failure on the part of the utility company or severe weather that disrupts the power grid.

The purpose of a generator is to take over when power is lost or not available and provide you with the electricity you and your family need and depend on.

What types of generators are there?

There are 3 primary types of generators:

Air-cooled Portables - These usually have a gasoline air cooled engine operating upwards of 3600 rpm. Used for small portable power needs, whether it be light commercial or for small home periodic portable standby. These generators are manually operated, recommended for short monitored run times only and cannot be used for automatic home standby.

Standby Generators - These are fixed installations that operate automatically for home or small business standby. Within seconds of a utility outage an automatic transfer switch senses the power loss, commands the generator to start and then transfers the electrical load to the generator. The standby generator begins supplying power to the circuits. After utility power returns, the automatic transfer switch transfers the electrical load back to the utility and signals the standby generator to shut off. It then returns to standby mode where it awaits the next outage. Most units will run on diesel, natural gas, or liquid propane gas. Aurora Generators are equipped with diesel liquid cooled engines, operating at 1800 rpm.

Commercial Generators - These are similar to the standby generators and can be either portable such as trailer mounted, or fixed installation which includes prime power. Both the engine and alternator are designed and equipped to be more rugged and durable. Commonly, commercial generators are 'three phase' to support a much larger electrical demand. Commercial grade generators can be custom built based on your company's specific needs. They also require minimum maintenance, just an oil and filter change every 500 hours. Commercial generators are usually diesel, due to its far superiority in both longevity, fuel economy and lesser overall operating expense. On board, safer diesel fuel supply eliminates costly additional external fuel connections or supply such as is the case with natural gas or liquid propane.

How are generators sized?

Generators are sized in several different ways depending on the requirements of the site and load to be covered. For example, some customers may require that the generator provide backup for the entire site, while others may only require 'essential' loads to be generator backed. It is also necessary to consider the type of load that will be applied to the unit. For example, UPS loads have some harmonic content (especially older UPS's) and the generator must be sized correctly to cope with this type of load.

Motors and pumps require a 'starting' wattage that will affect the performance of the generator during starting. Another aspect to consider is the nature of the engine chosen. Some turbo-charged engines have a relatively low initial load step capability – it is sometimes necessary to oversize the unit to cope with the required site load.

Careful thought of which loads to apply and whether to stagger the re-application of the loads can make a significant difference to the overall cost of the installation.

What is the difference between an air-cooled vs a liquid-cooled generator?

Air-cooled systems work by forcing air to the engine's metal fins around the engine cylinder only. Liquid-cooling systems, on the other hand, have a radiator and a water pump. The pump cycles the thermostatically controlled liquid coolant to the engine block through hoses, and the heat from the engine is transferred to the coolant. The heated liquid then goes to the radiator where the air cools it. Diesel generator engines commonly use liquid-cooling, but you will find all portable and most liquid propane, natural gas generators are air-cooled engines models only.

Air-cooled engines are generally cheaper to produce than liquid-cooled engines. This is because their components are less expensive and require fewer parts. Air-cooled engines can easily overheat and have a much shorter engine life. Since air-cooled engines have the potential to overheat, using them full time is not recommended, nor warranted. Air-cooled engines that fail generally require a major overhaul. Their maintenance and repair tasks tend to be more frequent and more time-consuming.

Since air-cooled engines in either portable generators or home standby LPG or LNG work at much faster speeds, they also wear out much faster. Oil break-down also happens faster and damage can occur with little warning. Aurora Generators recommends you do NOT run air-cooled engines full-time. Shut down your air-cooled engine every few hours so it can cool. This is a good time to check your oil, add fuel and perform general maintenance and/or inspections. All Aurora Generators are liquid cooled ranging from as small as 8kW - 200kW.

Why should I buy a generator: Standby/Emergency, Prime, or Continuous power supply for my home or business?

There are numerous reasons for individuals or businesses to own their own backup/standby, prime or continuous power supply generator set(s). Generators provide an added level of insurance to your personal daily routine or business operations ensuring uninterrupted power supply. The inconvenience of a power outage is rarely noticed until you are the victim of an untimely power loss or disruption.

Backup Power for individual residences can avoid the inconvenience of power outages by purchasing a small standby generator. Electricity is essential to maintain lighting, HVAC, refrigeration, electronic entertainment equipment, household appliances, well pumps and security systems.

Smaller residences only require a small amount of backup power, typically in the neighbourhood of 8-10kW. Larger residences or businesses may require more power, which will increase the cost slightly, but still is highly affordable considering the benefits of owning your own power supply.

As a business owner, an emergency standby generator provides an added level of insurance to keep your operation running smoothly without interruption. Startups and shutdowns due to power outages can prove to be very costly. The advantage to having a localized backup power supply is to provide a consistent power to your business.

Why should I buy an AURORA home standby generator instead of a portable generator?

While portable generators are effective in terms of backup power, an Aurora home standby generator produces more power and offers hassle-free automatic operation even when you aren't at home and exercises to ensure extended life.

With a home standby generator, there is no need to run extension cords, the unit will operate rain or shine, and it will automatically turn on and off.

Why should I buy a diesel generator over a gas or propane one?

In the event of a natural disaster, gas and propane lines are usually shut down by the utility companies or the government to prevent further destruction, leaving those customers who have a natural gas or propane generator with a useless unit. Diesel is readily available from your local gas station and therefore, your diesel generator will operate without any restrictions. This scenario alone has influenced many of our customers to purchase a diesel generator.

A diesel generator will last you approximately 22,000 - 25,000 hours compared to a natural gas or propane generator that will last approximately 1,500 hours in total. The extra money you spend on a diesel generator is obviously justified.

Thanks to Rudolf Diesel for his invention, the diesel engine has proved to be extremely efficient and cost effective. Diesel fuel is priced somewhat the same as gasoline but diesel has a higher energy density, i.e. more energy can be extracted from diesel as compared with the same volume of gasoline. Therefore, diesel engines provide better fuel economy, making it an obvious choice for heavy-duty transportation and equipment such as generators.

Diesel is heavier and oilier compared with gasoline and has a boiling point higher than that of water. Diesel engines are attracting greater attention due to higher efficiency.

In today's world, where fuel prices are increasing as a consequence of spiralling demand and diminishing supply, you need to choose a cost effective fuel to meet your needs.

How does a diesel engine work?

The distinction lies in the type of ignition. While gasoline engines operate on spark ignition, diesel engines employ compression - ignition for igniting the fuel. In the latter, air is drawn into the engine and subjected to high compression that heats it up. This results in a very high temperature in the engine, much higher than the temperature attained in a gasoline engine.

At peak temperature and pressure, diesel that is let into the engine ignites on account of the extreme temperature. In a diesel engine, air and fuel are infused into the engine at different stages, as opposed to a gas engine where a mixture of air and gas are introduced. Fuel is injected into the diesel engine using an injector whereas in a gasoline engine, a carburetor is used for this purpose.

In a gasoline engine, fuel and air are sent into the engine together and then compressed. The air and fuel mixture limits fuel compression and hence the overall efficiency. A diesel engine compresses at the ratio of 14:1 up to 25:1, whereas in a gasoline engine the compression ratio is between 8:1 and 12:1.

After combustion, by-products are removed from the engine through the exhaust. For starting during cold months extra heat is provided through 'glow plugs'. Diesel engines can either be two cycles or four cycles and are chosen depending on the mode of operation. Air-cooled and liquid-cooled engines are the variants to be chosen appropriately. Liquid-cooled engines provide far better engine life, performance, and quieter operation.

What are the advantages of a diesel engine?

A diesel engine is much more efficient and preferable as compared to a gasoline engine due to the following reasons: Modern diesel engines have overcome disadvantages of earlier models with higher noise and emissions. They are now quieter, much cleaner and require less maintenance as compared with gas engines of a similar size. They are more rugged, reliable and cost effective. There is no sparking as the fuel auto-ignites.

The absence of ignition systems including ignition coils, spark plugs and spark wires lowers the maintenance costs and failures. Fuel cost per Kilowatt produced is 30-50% lower than that of gas engines. An 1800 rpm water cooled diesel unit operates for 12,000 to 30,000 hours before any major maintenance is necessary. An 1800 rpm water cooled gas unit usually operates for 6000-10,000 hours before it requires replacement.

What type of battery is included with my generator?

We install an EastPenn battery in every generator. EastPenn batteries provide the industries longest free replacement warranty program. These batteries are made in Canada and are very dependable and will last for a very long time.

What happens when the power goes out? How will my generator start to work?

You have the option of buying an automatic transfer switch, or manual switch when you order your generator. This is a switch that is installed by your electrician and is attached to your power supply box. An automatic switch will kick in within a few seconds when the power goes out and it will start your generator automatically. Once power is restored the automatic transfer switch will transfer back to utility power and turns off the generator with no work on your part.

If you do not have an automatic transfer switch, you will need to manually start your generator then manually transfer power from utility to generator. Reverse procedure when utility power is restored.

I live off-grid. Will your generator work if I'm off-grid?

Yes, we have off-grid models that are best suited for off grid applications with warranty coverage.

Do you sell solar panels to keep my batteries charged if I am off-grid?

Yes, we do offer a solar panel for the purpose of maintaining your Aurora generator battery when 120VAC is not available.

What size of generator do I need for my home or cottage?

This will depend on what you would like to backup during a power outage. Usually an electrician will walk you through your home, cottage or business and calculate the exact voltage you are currently using to determine what size generator is best for your needs.

One of our Aurora Generator sales team members can assist in sizing as well. Every home or business will have different needs. The most logical way to determine your needs is to envision your home without power. Some outages may be short in duration, while others could last for days or weeks.

Will your generator power my small business or gas station?

Yes, our 30kW generator will power a small business or gas station depending on what your requirements are for your business. An electrician can better assist you with the exact generator size you will require.

Can an automatic standby generator replace utility service?

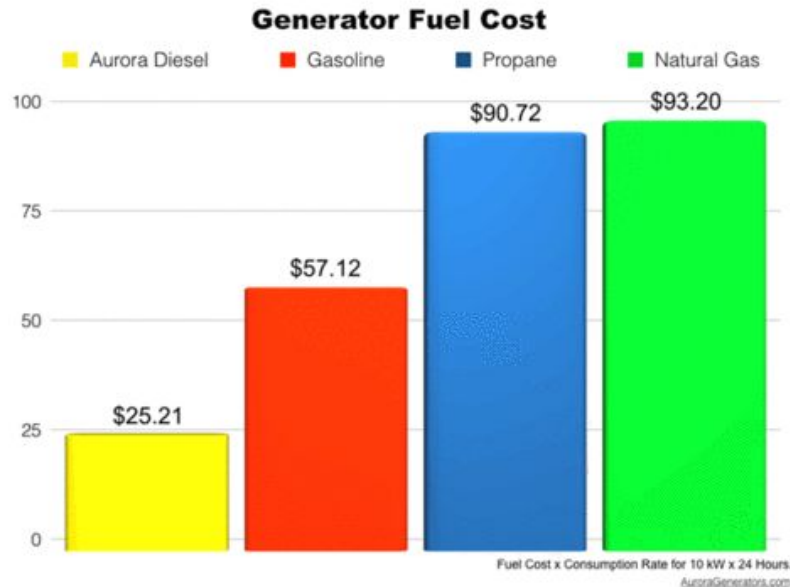
No. Full time residences require 24/7 power. The generator fuel costs and maintenance would be much more expensive than buying power from the utility company since their cost to produce electricity is divided among thousands of customers.

Yes, off grid, part time cottages/cabins and hunt camps utilize Aurora Generators as alternative power supply.

VALUE

What is the difference in price for operating a diesel over natural gas or liquid propane generator?

This chart shows the cost difference between diesel, gasoline, propane and natural gas. It is based on a 10kW generator running for 24 hours.



What are the cost considerations?

If you are considering purchasing a generator for your home or business there are several costs to bear in mind. The cost of the generator itself. If you want to use your generator for powering all or part of your home you'll need a transfer switch. A transfer switch is a device that is fed by both utility and generator power. It isolates the two types of power from each other so a back feed does not occur.

The National Electrical Code (NEC) requires a device like this if two types of power are going to feed the house. If you opt for a standby generator then be sure to get an estimate for a professional installation. As part of the installation, there may also be costs related to required local permits. Once your generator is up and running it will periodically require routine maintenance in order to ensure optimal performance.

INSTALLATION

Who does the installation work on my generator?

A licensed electrician is required to do installation. You may need to also check with your local by-laws to see if any permits are required.

Can I install the generator myself?

You could perform the simpler site preparation steps and have a professional make the electrical panel and fuel connections, or you could complete the entire installation yourself. However, for safety reasons and to ensure adherence to all local, state and national electrical codes, particularly for non pre-wired or larger systems, we recommend you use a licensed contractor since this will ensure your warranty will be valid.

How much will it cost to hook up my generator by an electrician once it arrives?

Every application is different and electricians will charge a different amount based on how long it takes to install, cable requirements, their hourly rate, etc. Talk to your dealer, electrician or installer for an accurate quote before you begin.

What does the generator sit on once it's installed?

The generator unit should be mounted on a flat solid foundation, such as a cement slab. Minimum thickness should be 4". If you have a 100 gallon sub-base fuel tank, the platform it sits on should be 5"-6" in thickness. Speak to an authorized Aurora Generator dealer, or call us directly for more detailed information regarding slab requirements.