

Going key off?

An inverter is in your future.
What do you need to know?

Special to Land Line

If you're opting to go idle-free, be it for economics or out of necessity for compliance with anti-idling laws, an inverter is likely in your future.

Power inverters are the devices that convert standard battery (DC) power to AC household power. They are growing in popularity in the trucking industry as more truckers are opting for key-off comfort.

Xantrex, a supplier of inverters, says shipments have risen sharply since early 2011 and the company expects this trend to continue in the next few years.

With interest at an all-time high, questions still abound about inverters. According to Don Wilson, Xantrex's sales application specialist, "research and knowing what you need is critical prior to making a purchase. One size does not fit all, and inverter quality varies greatly."

What size should I buy?

Far and away, Wilson says "what size" is the No. 1 and most important question he hears from drivers.

"It's easy to say get the biggest inverter on the market and you'll be covered for all your needs," Wilson says. "But that's not the best advice. Each driver should do a self-examination on how they will use an inverter – what items they want powered and what items will be used at the same time. That will help you 'right size' the inverter for your operation."

As an example, Wilson says drivers will often run a microwave, TV and laptop all at the same time. "On each device you'll see a wattage number," he said. "A microwave might be rated at 1,000 watts, a TV at 250 watts, and a laptop at 95. Add them up to see how much continuous power you'll need and then add 20 percent. So, in this case you'll need just over 1,600 watts. Next, round up to find an inverter that meets your power needs."

While determining continuous power is an important consideration, so is "surge power."

"Whenever you power up any device, the initial load is more – and sometimes double – what the continuous power requirement is," Wilson says. "So

How much power [watts] do you need?

Microwave:	1,000
TV:	250
Hot Plate:	1,300
DVD Player:	40
Laptop:	95
Hair Dryer:	1,500
Electric Blanket:	200
Portable Heater:	1,000-1,500
Electric toothbrush:	2

the surge rating on quality inverters should be about double. So an 1,800-watt inverter can handle a short 3,600-watt power surge requirement."

Next, Wilson says to research how long the inverter can handle the surge. "The longer the better," he says.

What type of inverter should I buy – sine or modified sine wave?

There are two types of inverters on the market, a sine wave and modified sine wave.

"Both work well in a truck environment, but for those running sensitive electronics or products that are plugged into their own chargers – like a drill or a toothbrush – sine wave is the preferred choice," says Wilson. "Since sine wave is the same power as what you get at home, the voltage is consistent without spikes or drops. So the device you're powering reacts just as it would if you were plugged in at home.

But, in most cases, modified sine wave power is just fine in operating most electronics and appliances with the exception of the few sensitive applications."

As for the price difference? Wilson says the gap has narrowed and today most higher-wattage sine wave inverters cost about 15 to 20 percent more than a modified inverter.

With a sine wave unit, you'll notice a slight decrease in the efficiency rating since electronics within the inverter use power to keep electrical levels consistent," says Wilson. "It's not much. We have an 87 percent efficiency rating on a Xantrex sine wave unit compared to 92 percent on a modified inverter.

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The co\$T of clean

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June 1, 2006 – New rules take effect requiring refiners to produce only “ultra-low-sulfur diesel” containing 15 ppm sulfur. Retailers will be required to carry ULSD within months. The EPA provides special hardship provisions that allow some refiners and retailers extra time to implement ULSD by 2009.

Oct. 15, 2006 – ULSD is widely available at the pump and is separate from low-sulfur diesel in the distribution system. The remaining supplies of 500 ppm diesel are recommended only for pre-2007 engines and off-highway diesel vehicles such as locomotives. Alaska will be the last state to fully integrate ULSD in 2010.

2007 – The “2007 Highway Rule” is in full effect, and truckers report 5-7 percent more fuel consumption due to emission controls. Compliant trucks cost \$7,000 more than they did in 2006.

Congress directs the U.S. Department of Transportation and EPA to improve fuel efficiency of medium- and heavy-duty trucks in 2010. The U.S. Supreme Court, in *Massachusetts v. EPA*, designates greenhouse gases, including carbon dioxide, as a pollutant under the Clean Air Act, allowing EPA to take regulatory action. This effectively paves the way for EPA to be the lead agency with control over fuel economy standards.

2009 – Another pre-buy becomes reality ahead of the EPA’s 2010 promise to add another \$7,000 to \$10,000 to the price of new trucks.

May 21, 2010 – President Obama announces that the EPA and National Highway Traffic Safety Administration will partner to establish the first ever fuel efficiency and greenhouse gas emission standards for model year 2014 through 2018 medium- and heavy-duty trucks.

Sept. 15, 2011 – EPA and NHTSA issue their final rule on fuel efficiency and greenhouse gas emissions. This becomes known as “GHG Phase I.”

Feb. 13, 2012 – The American Truck Dealers, part of the National Automobile Dealers Association, estimates that EPA emission standards from 2004 to 2010 added \$21,000 to the price of new trucks. The increases do not take higher warranty costs, additional financing or increased excise taxes into account for those vehicles.

Feb 18, 2014 – President Obama announces that EPA and NHTSA are launching work on “GHG Phase II” for trucks beyond model year 2018. The agencies vow to include trailers and new technology requirements as part of the total package. **LL**

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It’s like the difference between running a 6-cylinder car versus 4-cylinder car. That 4-cylinder car may get a bit better fuel economy, but the 6-cylinder is better in overall performance.”

Should I get an inverter with a battery charger?

The simple answer is yes if you can use ‘shorepower’ (electrical outlets at home or on the road at terminals, loading docks, or truck stop),” says Wilson. “When plugged in, you can run everything you’re running with your inverter for as long as you want, plus you recharge and top off your batteries. The more you can use shorepower, the better, as it prolongs the life of your batteries.”

According to Wilson, most installations use the inverter off the truck’s starting batteries, and quality inverters will have a low-voltage disconnect (LVD) to shut down when voltage drops to 11.7 volts. This ensures the truck will have enough juice to start.

“Check on the LVD feature before you buy an inverter,” cautions Wilson. “Many inverters on the market will run the batteries down to 10.5 volts, which will let you run your electrical devices longer in the cab and sleeper. However, you won’t be able to start your truck unless your truck comes equipped with its own LVD.

“Another option is to run two dedicated deep-cycle batteries and connect them to your inverter,” continues Wilson. “Deep cycle batteries were built to be drawn down to a 50 percent state of charge, or 10.5 volts. This gives you double to triple the amount of continuous power to run your hotel loads.” **LL**