

# Lithium Power: the New Driving Force to Boost Uptime, Fleet Productivity

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If you're a fan of comic books, you're no doubt familiar with the adage, "With great power comes great responsibility." When it comes to the trucking industry, and the potential of combining lithium ion and solar technologies, the axiom is, "With great power comes great reliability."

Many fleets are seeking power solutions that represent clean energy. Fleet managers are faced with the challenge of needing more power, but without increasing the number of autostarts or hours idling. Due to tighter idling regulations and the constant pressure to increase efficiency, fleets are constantly searching for new technologies to reduce both fuel and maintenance costs.

You frequently hear debates about the viability of fully electric Class 8 trucks. What's ironic is that sleeper cab hotel loads have not yet been fully electrified! Some drivers are still idling their engine or firing up a diesel powered APU just to power the microwave to heat up dinner, watch a movie, or run the air conditioner to sleep at night.

Many fleets use Auxiliary Power Units (APUs) to reduce truck engine runtime, maintenance, and fuel usage. There are two types of APUs commonly used today, diesel powered and battery powered. Diesel APUs practically eliminate truck engine idling for hotel loads, but still require some fuel and maintenance themselves (although much less than idling the truck engine). Battery or Electric APUs (sometimes referred to as EPUs) do not require maintenance or fuel, but do auto-start the truck from time to time when the batteries need to be recharged. With technology advancing, there's now a better solution to run all of your electronics including climate systems. Using an inverter charger paired with a lithium battery pack can provide both DC and AC power solutions to run all sleeper cab hotel loads, including HVAC, without fuel, maintenance, or truck auto-starts. Adding a solar panel to the system will ensure batteries stay topped off, and that you will virtually never run out of power when managed properly.

The main reason that lithium batteries are such a game changer is that they can be completely discharged without damage and provide up to 6-8X more cycles than the typical deep-cycle battery. So, if you have a 600 amp hour lithium battery, you have 600 amp hours of usable power. Lead acid batteries, on the other hand can only be discharged 50 percent at most without causing them damage. Most commercial vehicles have 400 amp hour

battery banks, which only gives you 200 amp hours of usable power. Making that even less effective, most OEMs only allow you to discharge the batteries 30 percent, so in that case, you're hardly getting any usable battery power at all.

You might think more capacity means more bulk. Just the opposite is true. As the world's lightest metal, lithium provides a huge weight advantage, Li-Ion batteries are 60-80 percent lighter than their lead counterparts. A typical Group 31 battery weighs about 75 lbs., while a similar Li-Ion battery only weighs 28 lbs.

Since most trucks are on the road seven to ten hours every single day, the truck alternator provides enough power to charge the lithium pack. Adding solar is the icing on the cake to keep the battery fully charged and extend its lifespan. As an OEM for the trucking industry, we've been promoting solar for years because it simply makes sense. Solar acts as a secondary charging source for house batteries, lift gate batteries, and battery-based APUs all of which, if not properly charged, can create downtime and lost productivity. Park a truck and measure how much power is being depleted out of the battery—it's significant. All the computer sensors and electronic devices in the truck are constantly drawing power. If you're just off-venting parasitic loads, which is the major issue with sleeper cabs, a 165-watt solar panel measuring approximately 3'x4' is sufficient and can be mounted inconspicuously in places on tractors, including roof fairings and sleeper

roofs, areas that have direct access to sunlight. Thinner, flexible solar panels also mean improved aerodynamics.

Isn't solar dependent on the sun? Technically, that's true. But technologies have moved so rapidly that qual-

ity solar panels can actually harvest quite a bit of power even on cloudy days. The other misconception is that batteries will never discharge when connected to solar, and that's just not the case. It's really about offsetting battery drain, and with solar power continually pouring in, it completely eliminates that issue.

Solar panels are typically connected directly to the batteries. The way it works, is solar is connected to a "charge controller" that might be on the panel itself or exist as an external device mounted in the cab so that you can see the data on how the panel is performing. That controller then regulates the power that's coming off the solar panel, making sure it's the right voltage for the type of battery. There are products that integrate with



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our inverters and chargers that display information about the solar system.

Is a complete system with lithium, inverter charger, and solar worth it? A typical warranty on a traditional lead acid battery is three years, but the importance of uptime can lead fleets to replace batteries much more frequently. Li-Ion may cost more initially, but are a better investment in the long run since it can offer 6-8 times more cycles and gives constant voltage through the entire cycle of the battery. Say a fleet utilizes their vehicles for four years before trading them in, by incorporating a system like the Freedom eGEN System from Xantrex, they will never have to replace a battery (lithium or starting) and have easily realized a return on their investment.

Driver comfort is an important aspect of job satisfaction, recruitment, and retention- so fleets are specifying their trucks with more amenities than ever before. By separating a truck's starting bank and creating a true house bank dedicated only to hotel loads, you provide more runtime for hotel-ing and eliminate the possibility of needing a jump start.

Imagine the benefits when taking advantage of the 34-hour Restart Rule, which helps drivers comply with the federal Hours of Service (HOS) regulations by taking a 34-hour off-duty period to restart the work week. With a lithium and solar system, you can rest assured you'll have plenty of power and a quiet night's sleep. Gone will be having to shut down electronics to save the battery, or waking up in the middle of the night from an auto-start.

A recent Confidence Report from the North American Council for Freight Efficiency (NACFE) noted that solar panels "not only help the HVAC system make it through the night without draining the truck's batteries, but also reduce the load on the alternator the next morning, resulting in fuel savings."

It's easy to see how solar and lithium have the ability to save the day when it comes to increasing battery life and reducing maintenance and fuel consumption -- all of which are beneficial for fleets. For drivers, it means not having to feel like they're in a remote sleeper cab with only limited power — they can have an incredible amount of run-time and the comfort levels of home.

# Carrier Logistics Offering AI Tool to Assist Clients during the COVID-19 Crisis

Responding to need they see within the industry, Carrier Logistics Inc. (CLI), has introduced LOCI, an artificial intelligence (AI) tool for determining the exact location type for a pick-up or delivery.

This new module improves the efficiency of the supply chain by providing automation around how to manage different customer location types. LOCI works seamlessly with FACTS, the total freight management solution installed in hundreds of sites around the globe, to give users detailed information on a pick-up or delivery address, and apply business rules regarding how to best service those addresses. According to CLI, LOCI gives users:

- Over 115 Categories of Locations — so much more than residential or commercial - that cover everything from airport to zoo.
- Ease of use: Fully-integrated into the FACTS shipment entry and rating modules.
- Ability to Plan and Dispatch the Right Driver with the Right Equipment
- Automated Assigning of a Carrier's Accessorials.

"We know that right now, many carriers are servicing different customers and locations than they have in the past," said Ben Wiesen, president of CLI. "And we know that staff at the carriers is in a state of flux, with people covering dispatch who

might not have the tribal knowledge about the customer base. And of course, we know how confusing that can be. In order to assist our clients during these turbulent times, (and even as



the economy starts to open up) we are offering this emerging technology for free through June 30, 2020." Carriers need to know during these unprecedented times—Are companies open? Are their hours changed or reduced? Are they staffed to accept delivery? LOCI can help cut down the expense of return shipments and provide the data you need to plan your operations in the most efficient way possible, the company says.