

**REDUCE FUEL COST AND EMISSIONS WITHOUT
GOING FULLY ELECTRIC?**
NEW TECHNOLOGIES MAKE IT POSSIBLE.



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If you had an opportunity to attend one of the fire and rescue industry conferences or trade shows this year, or even looked at an industry publication over the last few months, you may have noticed the emerging trend of fully electric vehicles in the emergency vehicle market.



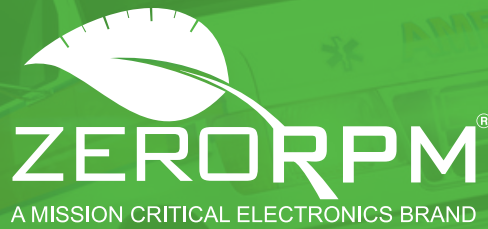
More and more government agencies are prioritizing green energy initiatives and focusing on idle reduction for their vehicle fleets. This includes fire apparatus, ambulance, police, and other emergency response vehicles.

Emergency vehicles can spend 4 hours or more in idle over the course of an 8-hour shift. This translates to 33 miles of engine wear and tear each hour, 7300 gallons of fuel over a 5-year period, and 70 tons of CO₂ released into the air. Reduction of idle time and reliance on generators could result in big savings for fire departments, not just in fuel cost but in maintenance and repairs also. We recently received information from a healthcare provider in the Southwest who is using the idle reduction system on their ambulance. They saw a reduction in fuel expenditure of over \$8,500.00 per year. That equates to a two-year return on

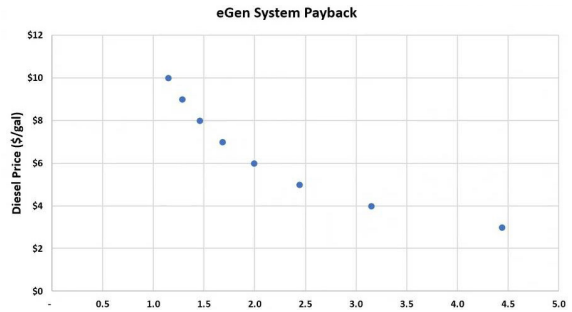
their initial investment into the system.

The introduction of fully electric technology into the emergency vehicle market is a giant leap for the industry and shows great promise in alleviating the blows to the budget thanks to the rising fuel and maintenance costs that are being seen across the Country. However, fully electric vehicles come with a hefty price tag on their own. The cost of a new electric fire apparatus versus a traditional model, coupled with the cost to implement infrastructure for charging units, replacement of batteries, and the required maintenance for such a vehicle can be a daunting figure for a fire department or government agency. Fortunately, advancements in lithium battery technology have paved the way for a more cost-effective and energy efficient alternative to "going green".

Although, it's not just about cost. Making sure emergency vehicles can respond quickly, arrive safely, and perform flawlessly is the greatest priority. Protecting, saving, and defending lives and property are of the utmost importance in the emergency response industry. Any component or system installed on a fire truck, ambulance, or police vehicle must be able to withstand the rigorous demands and harsh environments these vehicles operate in. This is why Mission Critical Electronics (MCE), Kussmaul Electronics, and ZeroRPM® have responded with alternative power solutions that meet the demand of today's emergency vehicle industry without sacrificing performance, durability, and reliability.



Originally developed for utility and emergency medical service vehicles with critical power needs, ZeroRPM essentially creates a hybrid vehicle power system that provides reliable onboard power and climate control without the need for constant idling. Once a vehicle is in park, its proprietary idle mitigation system automatically shuts down the engine and provides chassis power utilizing high-density Lithium-Ion batteries.



The batteries (covered by a five-year warranty) are charged natively from the chassis alternator, solar, or direct shore power. For extended times of stationary use of the vehicle, the ZeroRPM system manages the engine start/stop to recharge the batteries as needed.

ZeroRPM systems are more than just a rechargeable electric auxiliary power unit — it's a completely integrated system that works with the existing electrical and HVAC system to supply automatic engine-off A/C and heating through factory vents, plus full power to the onboard electronics, including lights, radio, and inverters. With scalable product stacks, ZeroRPM systems can supply your vehicle with energy systems starting at 100Ah at 12VDC, 24VDC, 36VDC, and 48VDC which are configurable to meet your unique requirements. The ZeroRPM software is compatible with virtually all common commercial chassis platforms.

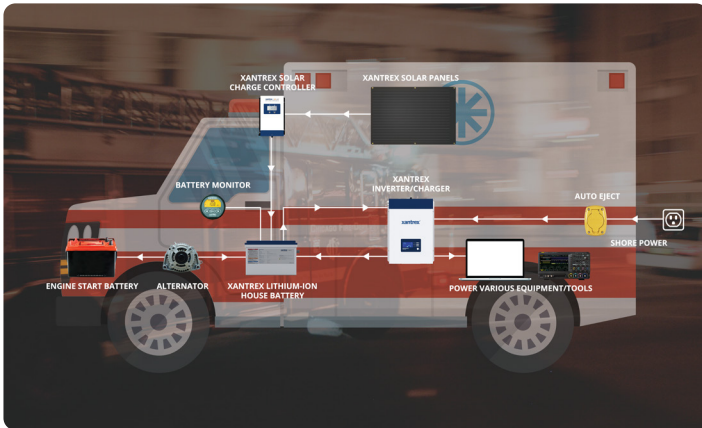


Users can see the effectiveness of their ZeroRPM system through Intellimetrics®; this software gives users detailed insight into their system's performance by analyzing data for each vehicle in a fleet. A secure portal provides customized reports and graphs of fuel savings, emissions reduction, engine-hour reduction and overall efficiency. Fleet managers have discovered that they average eliminating about 75% of idling with ZeroRPM's customized solutions.



FREEDOMeGEN

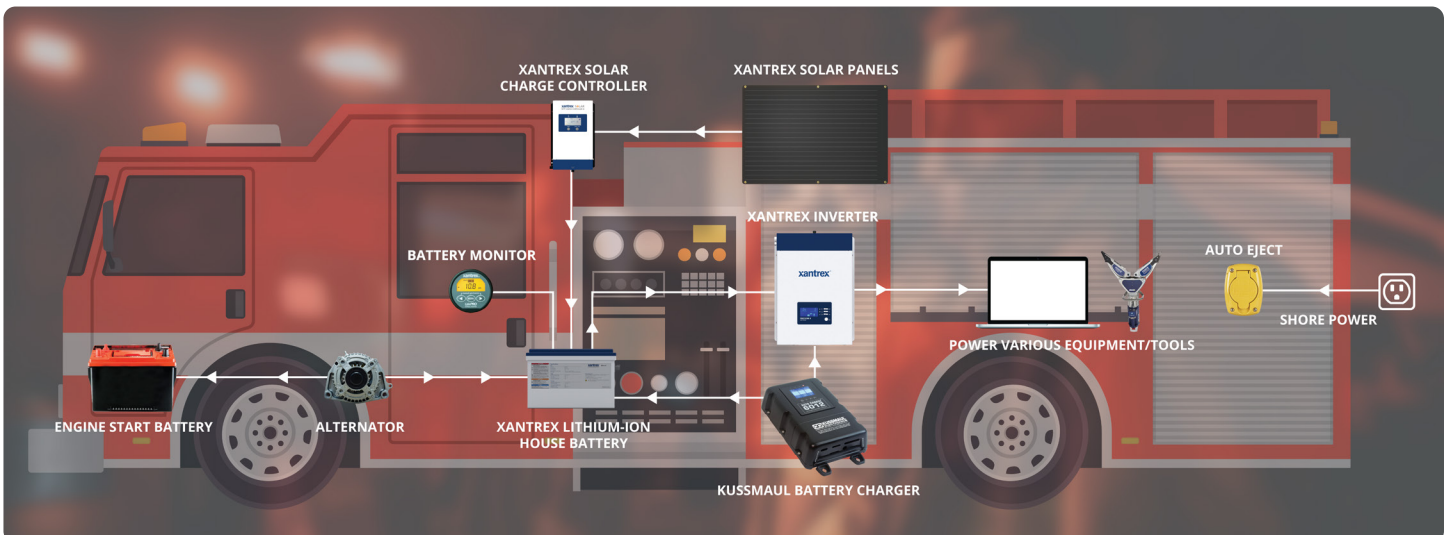
BY MISSION CRITICAL ELECTRONICS



FREEDOM eGEN solution also leverages the remarkable performance of today's advanced lithium-ion batteries.

Available from 100Ah, as part of a fully customizable power generation system, FREEDOM eGEN batteries may supply up to 6,000 charge-discharge cycles which is 10-12 times the life cycles of traditional batteries. Regulated by the built-in intelligent Battery Management System (BMS), FREEDOM eGEN supports charging from both a second alternator (included), solar, and shore power. The batteries are also equipped with a heating pad enabling operation in colder climates which may be an issue with many other lithium-ion battery brands.

The FREEDOM eGEN delivers AC power through an inverter/charger available in a variety of power and output charging levels. The Freedom series of inverter/chargers deliver continuous 120V true sine wave power — this is especially important for proper function of surge-sensitive instruments, meters, voltage indicators, laptops and more. A few models of the Freedom series inverter/chargers are able to generate an industry-leading five seconds of surge, also known as temporary power boost, for up to 2X the inverter's watt rating. This easily handles the initial surge required for the high initial draw that tools and equipment require. Most other inverters have surge power for less than one second.



WHICH SYSTEM IS BEST FOR YOU?

MCE/ZERORPM IDLE MITIGATION

Our Idle Mitigation System transforms a conventional vehicle into a hybrid when in park. Reduces emissions and protects the environment with quick ROI.

1. Lithium-Ion battery powered solution delivers power for climate control, onboard electronics and on-scene tools
2. The system integrates with a vehicle's electrical & engine system to provide engine off A/C & heating plus power for all onboard electronics
3. Once the vehicle is in park mode, the system shuts down engine and provides all required power from lithium ion battery source
4. For extended stationary use of vehicle, the system manages engine start/stop to recharge batteries as needed



MCE/FREEDOM eGEN LITHIUM-ION SYSTEM

Practical, clean, green power solution for extended runtime of onboard electronics and on-scene equipment. Advanced energy storage & multiple charging sources enable an independent power system.

1. The FREEDOM eGEN system offers a dedicated high power density lithium ion battery bank to run HVAC, hotel loads and tools
2. The lithium battery pack delivers 10-12X life cycle of traditional batteries
3. The battery pack may be replenished via multiple sources including high output auxiliary alternator, solar and shore power when plugged in
4. The system may be used in conjunction with a generator, but it significantly reduces generator runtime or may eliminate its use altogether

For more information on Zero Emissions Power or to get in touch with a sales representative, please visit
www.mission-critical-electronics.com/zeroemissionspower