



Supercapacitors ensure dependable power for starting backup generators: at home or at work

Generators are essential for providing backup power when grid power fails. Many users, homeowners and commercial businesses, rely on these systems for life-saving appliances, avoid disrupting sensitive processes and to prevent costly downtime during unexpected outages. Backup power generators are expected to supply electricity automatically when utility power is lost. One of the most prevalent issues with generators is startup failure.

While this can occur due to various reasons, the most common cause is failure of the starter battery. It can be due to a dead battery from environmental conditions, natural degradation / lack of timely replacement or theft. Generator engines employ secondary batteries to supply the necessary high startup current to the starter. However, 12 V lead-acid and lithium-ion batteries face several drawbacks,

including cold start difficulties due to insufficient current, battery leaks from overcharging, and rapid internal degradation under extreme temperatures. All of these issues can cause a generator not to start when electricity is needed most. Eaton's supercapacitors offer a robust solution for reliable generator engine starts, presenting significant advantages over batteries.

Eaton's XLR-LV supercapacitor modules are highly reliable, compact, and feature ultra-high capacitance energy storage to provide substantial starting power with very low equivalent series resistance (ESR). The XLR-LV module boasts high power density and can endure millions of starting and recharge events. One XLR 16 V, 500 F module can provide thousands of amps for starting, with an operating lifespan of up to 20 years* of virtually maintenance-free performance. This

eliminates the regular purchase and replacement of the battery or a maintenance contract, each of which can cost several hundred dollars every few years (typically 3 years).

Each module includes six XL60 3000 F cells, cumulatively offering 500 F and weighs just over 12 pounds (5.7 kg). In contrast to batteries (which store charges chemically), the XLR-LV module retains energy electrostatically within its electric double layer construction (EDLC), leading to fast recharging times (charging time maybe limited by the generator) in case of multiple outages in a short period. The XLR-LV module also withstands high-temperature variations due to its sturdy construction, operating within a temperature range of -40 °F (ideal for cold starts) to +148 °F (-40 °C to 65 °C) at over 90% efficiency. The supercapacitor materials used are environmentally friendly

and meet global standards for electronic waste. They can be recycled as any other electronic waste, do not require special shipping declarations and contain primarily carbon, aluminum and a simple electrolyte.

The XLR-LV module is a cost-effective alternative to traditional starting batteries, providing users with low total cost of ownership through minimized replacement and maintenance expenses. The compact design offers enhanced flexibility for generator starting applications, allowing manufacturers to reduce weight. These modules are perfect for genset starting in outdoor settings, including at home, commercial / industrial / medical buildings and military applications.

*Supercapacitor lifetimes vary based on charge voltage and temperature. See Eaton's application guidelines or contact your local Eaton sales representative for more information on lifetime estimates

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