



## Sustainable

Lead batteries are key to a cleaner, greener future. They are the most environmentally sustainable battery technology and a leader in renewable energy storage solutions.

### Environmentally Sound

From design through recycling and re-use, the circular economy of lead batteries greatly reduces their environmental footprint.

- + More than **99 percent** of lead batteries are recycled,<sup>1</sup> making them the most recycled consumer product in the U.S.<sup>2</sup> (Estimates show fewer than three percent of lithium ion batteries used in transportation and energy storage are recycled.<sup>3</sup>)
- + Lead from lead batteries **can be recycled infinitely**, with no loss of performance.
- + Modern, closed-loop recycling **keeps more than 122 million lead batteries from landfills** each year.<sup>1</sup>

### Essential in Green Technologies

Lead battery technology continually evolves to meet the needs of innovative applications in transportation and energy storage.

- + Lead batteries are **used worldwide in virtually every hybrid and electric vehicle**. They are an integral part of start-stop and micro-hybrid engine systems, which lower fuel consumption by up to 10 percent.<sup>4</sup>
- + By 2020, it is predicted that advanced start-stop lead batteries **will eliminate two million tons of vehicle greenhouse gas emissions** (equivalent to the annual energy use of 211,000 average U.S. households).<sup>5</sup>
- + A large number of **solar and wind facilities use lead batteries to regulate variability**. The batteries store excess energy when demand is low and release it when demand is high.

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A new lead battery is comprised of **more than 80 percent recycled lead**.<sup>4</sup>



When there is no access to a power grid, **lead batteries store energy** from renewable energy sources, such as wind and solar.

## A Lifeline to Remote Areas

Lead batteries are critical in closing the gap between those who have access to electricity and those who do not, especially in remote geographic areas.

- + **Nearly 25 percent** of the population of all developing countries has no electricity.<sup>6</sup>
- + Lead batteries are key to providing **clean energy and critical power for refrigeration and internet connectivity.**

## Vital Power: Advanced Lead Batteries



Sustainable



Innovative



Essential



Safe

Learn more at [EssentialEnergyEveryday.com](http://EssentialEnergyEveryday.com)



**Essential Energy Everyday** exists to increase awareness of the critical importance of lead batteries in powering our daily lives. We encourage continued investment in sustainable lead battery technology to store and provide energy on demand. Our initiative is supported by the two global trade associations that represent the lead battery and lead industries, **Battery Council International** and the **International Lead Association**.

<sup>1</sup> National Recycling Rate Study, Battery Council International, 2017

<sup>2</sup> Advancing Sustainable Materials Management: 2014 Fact Sheet, Environmental Protection Agency, Nov. 2016

<sup>3</sup> "Opportunities to Improve Recycling of Automotive Lithium Ion Batteries," The 22nd CIRP conference on Life Cycle Engineering, 2015

<sup>4</sup> "Environmental Impact and Life Cycle Assessment of Lead Battery and Architectural Sheet Production," *The International Journal of Life Cycle Assessment*, 2016

<sup>5</sup> International Lead Association, 2017

<sup>6</sup> Global Tracking Framework 2017 – Progress Toward Sustainable Energy, World Bank and the International Energy Agency, 2017