START-STOP VEHICLES REDUCE **EMISSIONS & BOOST FUEL ECONOMY**

Lead Batteries Provide the Power

Start-stop technology is a revolutionary step toward energy efficiency. Hybrid vehicles have always had this feature. Now, its use in nonhybrid cars and trucks is surging. Made possible by advanced lead batteries, the feature stops the engine when the car idles, keeps accessories powered, and seamlessly restarts when the driver is ready.



Growth Nearly every new car and truck now includes a lead battery for

starting, lighting, ignition (SLI) functions.

Global (by Millions)

Between 2016-2020, the market for start-stop-enabled vehicles will surge from 25 million to 65 million vehicles in North America, Europe and China.

36% of U.S. Light-Duty Trucks

Between 2012-2018, the number of light-duty trucks sold in the U.S. with start-stop grew from less than 1% to almost 36%.

35% of U.S. Cars

At the close of 2020, 35% of passenger cars sold in the U.S. will have this feature, compared to 9% in 2016.

Global (by Percentage)

From 2018-2022, the market for automotive start-stop systems is predicted to grow at nearly 20% (CAGR).



Benefits Start-stop is essential to sustainable transportation.

Reduce CO, Emissions

Start-stop technology using lead batteries is eliminating 4.5 million tons of greenhouse gas emissions annually in the U.S.

Boost Fuel Economy

Engine-off time can yield fuel

Driver Comfort

Start-stop is quiet and seamless, with no loss in comfort, safety or entertainment functions.



Driver-Friendly Technology

- 1. Gas engine shuts off during idle.
- 2. Lead battery keeps accessories running.
- 3. Lead battery restarts engine when driver is ready.

Easy and Affordable

Automakers can easily apply start-stop technology to traditional internal combustion engines.



savings ranging from 3–10%.







