

# START-STOP VEHICLES REDUCE EMISSIONS & BOOST FUEL ECONOMY

## Lead Batteries Provide the Power

Start-stop technology is a revolutionary step toward energy efficiency. Made possible by advanced lead batteries, this feature stops the engine when the car idles, keeps accessories powered, and seamlessly restarts when the driver is ready.



**Growth** Automakers favor lead batteries for starting, lighting, ignition (SLI) functions.

### Global

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



### 100% Growth Among Light Trucks

In 2017, 20% of light trucks sold in the U.S. had start-stop, compared to 10% in 2016.



### Standard by 2020

By 2020, most new cars will have this feature.

2020



### 40% of U.S. Cars in 2019

By the end of 2019, 40% of passenger cars sold in the U.S. will have this feature, compared to 9% in 2016.



**Benefits** Start-stop is essential to sustainable transportation.

### Reduce CO<sub>2</sub> Emissions

By 2020, start-stop will eliminate 2 million tons of vehicle greenhouse gas emissions annually in the U.S.



### Boost Fuel Economy

Engine-off time can yield fuel savings ranging from 3 - 10%.



### 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.



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