LEAD BATTERIES
ESSENTIAL FOR
THE AUTOMOTIVE INDUSTRY

Lead batteries are the most widely used batteries in vehicles. They are safe, reliable, low cost and make a vital contribution to the circular economy. Lead-based batteries remain essential for the needs of all current and future generations of cars.

99.99%
of vehicles using lead-based batteries

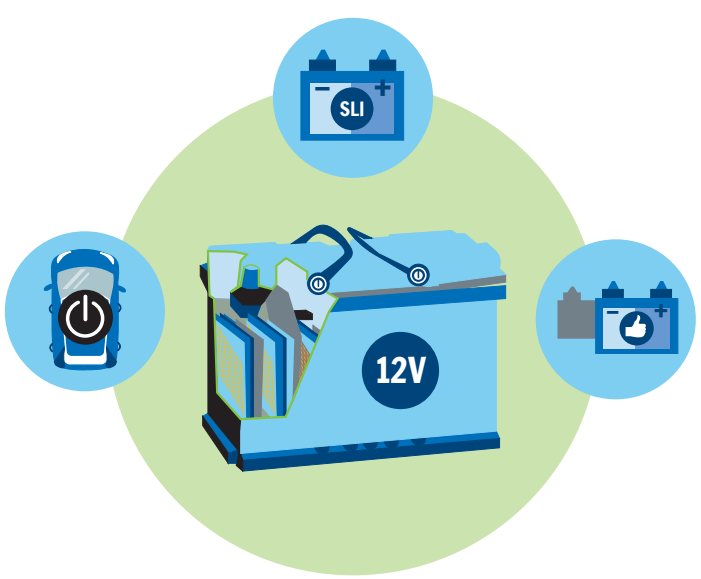
253 million
passenger cars on Europe's roads

0.01%
of vehicles using a single lithium-ion battery

What are lead batteries?

12-volt lead batteries are used in virtually every car, they are required to start the engine of a vehicle and to power the electrical system. These universal car batteries are also known as starter-lighting-ignition (or SLI) batteries.

Advanced lead batteries are also used in all start-stop and micro-hybrid vehicles, delivering significant CO_2, reductions in the most cost-efficient way.



In addition to the battery used for the propulsion of an electric vehicle (usually a lithium-ion one), all plug-in hybrid electric and full electric vehicles require a separate lead battery for functional safety, controls, comfort features and redundancy.

Lead batteries stand out from other technologies

SAFETY

Lead batteries are well understood systems that are inherently safe, making battery fires and explosions an extremely rare event. That is why lead batteries can be located in all positions in a vehicle. The high energy density of lithium-ion batteries makes ensuring their safety more challenging. Incorporating a lithium-ion battery requires a full redesign of the vehicle.

VEHICLE DESIGN

The design of a vehicle and its electrical architecture is closely linked to lead battery functionality. Over time, platform design has evolved around lead-based batteries. Adoption of a new single-battery technology would challenge the current state of the art and requires significant innovation in platform design.

WINTER PERFORMANCE

Cold cranking capabilities are required to start vehicles in very cold weather conditions. The unrivalled cold cranking properties of lead batteries make this technology essential and currently irreplaceable for every-day vehicles.

PERFORMANCE AT HIGH TEMPERATURES

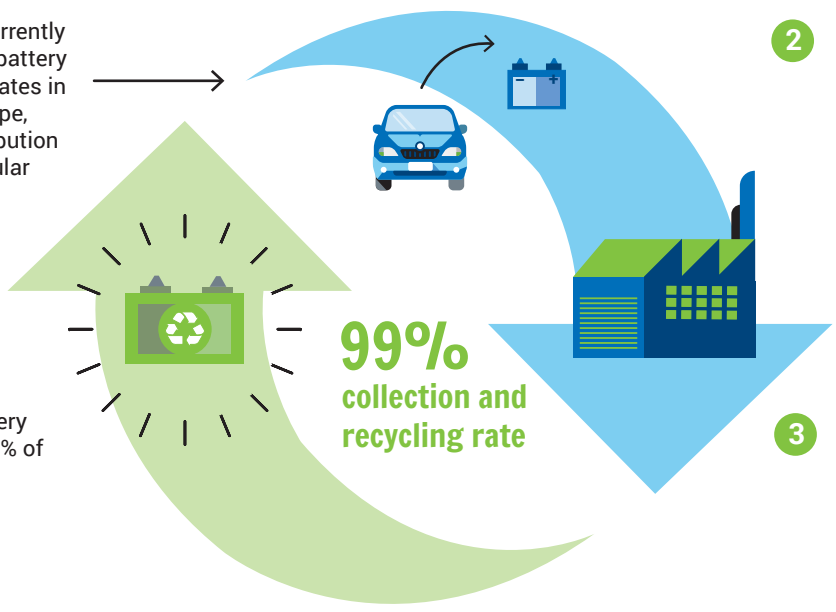
The durability of a battery at high temperatures is a key factor that determines the safety and lifetime of the battery. Lead-based batteries can withstand high internal temperatures. In warm climates, for example, ambient temperatures can reach more than 75°C under the bonnet. In comparison, a lithium-ion battery can only operate in significantly lower temperatures.

LOW COST

Lead batteries cost €30-80, while lithium-ion batteries are in the €300-500 price range. In addition to the lower cell-level cost, lead batteries do not require heat shielding, active cooling, or a sophisticated battery management system. This makes lead batteries the most cost efficient option for CO_2 reductions in automotive applications.

Efficient recycling of lead batteries

1. Lead batteries are currently the only automotive battery technology that operates in a closed loop in Europe, making a vital contribution to the European circular economy.
2. Virtually all lead batteries are collected and recycled through a very efficient infrastructure that is driven by the economic value of the battery.
3. In Europe, more than 99% of lead batteries are collected and recycled for further use in lead batteries. Other automotive battery technologies have lower recycling rates.
4. Moreover, a lead battery consists for about 85% of recycled material.



The lead battery industry is vital to the European economy

20,000 workers
directly employed in Europe by this sector

€ 5 billion
annual turnover

12.2 million Europeans
Lead-based batteries are used by the automotive industry which, directly and indirectly, employs 12.2 million Europeans.

Lead battery manufacturers and associated suppliers are located in virtually all EU countries. On the other hand, there is no significant lithium-ion cell production taking place in the EU, with the vast majority of production occurring outside Europe.

Closed-loop recycling of lead batteries is managed by collection and recycling companies located in many European countries, they operate under strict environmental permits.

ACEA European Automobile Manufacturers Association
EUROBAT Association of European Automotive and Industrial Battery Manufacturers
ila International Lead Association
JAMA Japan Automobile Manufacturers Association, Inc.

DISCLAIMER: While the authors of the infographic have taken great care in compiling this information, it is non-exhaustive and, for obvious reasons, complex issues had to be simplified (May 2016).