Lead batteries enable an energy-efficient, decarbonised transport sector

With vehicles representing more than **30% of final energy consumption in Europe**[1], the transition to an energy efficient, decarbonised transport sector is central to achieving Europe's climate change targets. The publication of the **EU's Energy Union Strategy in 2015**[2] provided a framework for multiple subsequent EU policies and initiatives to deliver transport decarbonisation for Europe. Lead batteries are a critical to achieving this ambitious target.

As the technology behind 'start-stop' micro-hybrid vehicles, lead batteries are delivering **up to 10%** CO_2 savings[3] in a highly cost-effective manner. In fact, they are an essential onboard component in mild-hybrid, full-hybrid and electric vehicles (EVs) and can also be installed in EV charging stations to improve their efficiency.

They also support the energy storage and distribution network, storing the renewable energy that will increasingly power EVs.

Through their extensive use in electric fork lift trucks and other industrial vehicles, lead batteries are also supporting e-mobility in vehicles.

The policy context

The 2015 Energy Union Strategy identified the transition to an energy efficient, decarbonised transport sector as a key area for action. The package of measures that followed in 2016 described the target of moving towards zero-emission vehicles, requiring further improvements to internal combustion engine vehicles and an accelerated transition towards low- and zero-emission vehicles.

Since then, three 'Europe On the Move' packages and accompanying legislative initiatives have outlined a long-term plan to deliver clean, socially fair, competitive mobility to all Europeans. This plan includes average CO_2 emissions targets for new cars and vans that are 30% lower in 2030, compared to 2021. For new trucks there are reduction targets of 15% by 2025 and 30% by 2030 compared to 2019.

Europe on the Move III also introduced a Strategic Action Plan on Batteries focused on the challenge of developing sustainable Europe-based battery value chains to power the transition.

How lead batteries support the transition to an energy-efficient, decarbonised transport sector

Lead batteries are key to the shift to sustainable, low emission transport systems, supporting increased vehicle hybridisation and electrification, all the way from start-stop technology to full EVs.

One of the most cost-effective ways to yield fuel savings and reduce CO_2 emissions is stop start technology - lead batteries enable vehicle fuel consumption and emissions by stopping the engine when the car comes to a full stop, and seamlessly restarting when the brake is released or the clutch is pressed.

By 2030 it is predicted that more than 80% of cars sold in the EU will be micro-hybrids.[4] The new car sales market will be dominated by those using this technology combined with regenerative braking, where the battery is able to store the energy generated by braking, saving the energy that would otherwise be lost. These advanced systems have the potential to eliminate millions of tons CO_2 emissions without the need to drastically alter vehicle design.

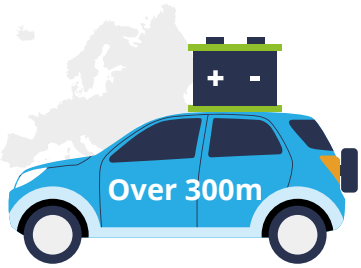
In EVs lead batteries also support critical on-board emergency and safety functions such as airbags, emergency systems, anti-lock brakes and battery management system. The EV revolution not only relies on lead batteries through their use in micro and mild hybrid applications, but also by being more widely used in EV charging stations themselves. Here, they improve efficiency, reduce cost and provide backup power.

The benefits of EVs are only fully realised when powered by clean energy, where lead batteries are increasingly being used to support renewable energy storage across the electricity network.

Beyond the automotive sector, lead batteries play a key role in industrial electric vehicles, especially forklift trucks and automated guided vehicles (AGVs) used for cleaning and railway applications. In fact, lead batteries represent approximately 90% of the EU motive battery power market[5] - saving energy, as well as reducing emissions and noise.

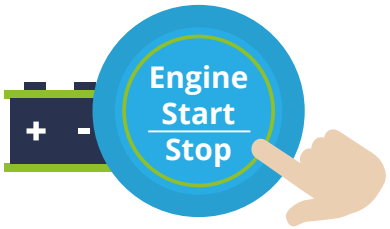
And what's more, automotive lead batteries exemplify the fundamental principles of eco-design: they are designed to be recycled at end-of-life with more than 90% of their material being recovered. The average lead battery made in the EU today contains more than 80% recycled materials, and almost all of the lead recovered in the recycling process is used to make new lead batteries.

The clean mobility revolution depends on the safety, reliability, sustainability and cost-effectiveness of lead batteries. Their unparalleled levels of safety and reliability are critical to ensuring the safety of drivers and passengers, while the low-cost lead batteries also provide them with an affordable option – key drivers in the adoption of e-mobility.

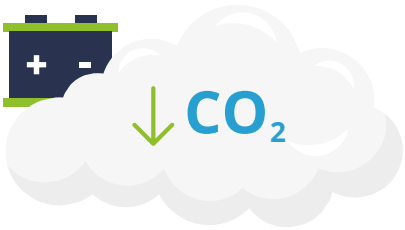


Over 300 million motor vehicles in the EU contain lead batteries.[6]

Vehicles represents more than 30% of final energy consumption in Europe.[7]



Lead batteries are the key enabling technology for start-stop engine technology that reduces fuel consumption and CO_2 emissions in conventional ICE vehicles by up to 10%.[8]



Advanced lead batteries increase fuel efficiency and reduce CO_2 emissions in micro-hybrids that are projected to represent 80% of cars on EU roads by 2030.[9]

By 2030 lead batteries will still represent approximately 75% of the EU motive battery power market powering forklift trucks.[10]

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