

ADVANCED RECHARGEABLE BATTERIES FOR A MORE SUSTAINABLE WORLD

Advanced rechargeable batteries are a main enabler for the transition towards low-emission mobility and decarbonized energy generation. They power an endless number of everyday applications, such as smartphones, tablets, power tools and robots, and have become a significant job engine for millions of people around the world.

Ensuring a sustainable development of the industry and that batteries' environmental and social benefits are kept high, has, hence, not only become a business objective but a mission for the advanced European battery industry.

4 GWh

Between 4 to 5 GWh of battery storage had been installed in developing countries by 2018, giving millions of people access to clean and affordable electricity.

PEF: HOW TO IDENTIFY SUSTAINABLE PRODUCTS

The Product Environmental Footprint is a new methodology introduced by the European Union to assess the environmental impact of a product and to help consumers take more sustainable purchase decisions.

RECHARGE was selected by the European Commission to help define key environmental indicators and to establish the environmental footprint for advanced rechargeable batteries.

Raw Materials

Batteries contain dozens of different materials, from highly abundant sodium and carbon, to scarce cobalt and copper. Sourcing locations comprise the Americas, Europe, Africa, Russia as well as Asia Pacific.

A responsible sourcing culture is critical to meeting increasing demand while remaining a true alternative to conventional energy generation.

While primary raw materials will always play an important role, the European battery industry has developed a strong waste treatment sector to increase the contribution of secondary raw materials to the materials mix. At the very same time, continuous improvements are made in materials and applications technology as well as in mining to further enhance resource efficiency and to lower the dependence on primary raw material sourcing.

75 GW

By 2018, the total power of rechargeable, lithium-based batteries put on the European market exceeded 75 GW, the equivalent of 30 new coal power plants."

Materials Handling

To allow for the electro-chemical reactions required to generate battery electricity, battery technologies have to resort to different substances, including sometimes hazardous ones. While the European industry heavily invests in material research and innovation, there are technical limitations to what can be substituted.

Albeit hazardous substances are used in batteries, they do not represent a health or environmental risk. That is because they are contained in the battery within sealed units, designed to prevent substances from being released during normal or reasonably foreseeable conditions of use - and damage.

First-class material handling practices during the manufacturing and end-of-life phase equally contribute to the safe lifecycle of a battery. So-called dry or white rooms provide for the right setting to control and collect gas emissions, recycle and reuse solvents as well as to filter dusts or other potential leakages to the highest applicable standards.

Emissions

Conventional road transport and fossil fuel-based energy generation make up for more than one third of the global greenhouse gas (GHG) emissions. Replacing them with low-emission alternatives is pivotal for achieving the goals for a climate-neutral society.

But #1: While batteries power emission-free mobility and play a significant role in renewable energy generation, they may not be entirely free of emissions themselves.

Raw material sourcing, manufacturing, (and charging) can entail CO₂ emissions linked to the use of non-renewable energy sources such as coal or gas.

Analysis shows that about 24¹ million tonnes of CO₂ are emitted due to the production of batteries every year.

But #2: Even when potential pollution from battery manufacturing (and charging) is accounted for, battery use in renewable energy production and transport helps cut global greenhouse gas emissions by 30% every year, with the potential to annually save up to 2.6 Gt in 2030².

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According to the Union of Concerned Scientists, Battery EVs make up for their usually higher manufacturing emissions within 6-18 months of driving. They only generate half the emissions of the average comparable gasoline car, and do not emit nitrogen oxides, particulates or noise during use.

Social Responsibility

Rechargeable batteries play a major role in providing millions of people with affordable and clean energy. Especially remote communities in poorly developed areas benefit from battery-powered electrification. In a 2018 report, the World Bank stated that about 4 to 5 GWh of battery storage had been installed in developing countries alone.

Additionally, investments across the battery value chain have resulted in an estimated 5 million jobs, expected to hit the 10 million mark in 2030³. Batteries have undoubtedly contributed to improving the lives of millions of people, both socially and economically.

Social responsibility is therefore a major business objective of the European advanced rechargeable battery industry. This objective includes corporate governance, best practice sharing, regulatory instruments and the adoption of international standards to help improve working conditions at all stages of the value chain and to ensure that our human rights are respected at all times.

12,464,000

From 2009 to 2017, more than twelve million batteries (excl. portable batteries) had been collected for recycling in the European Union⁴.

Waste Management

Collecting, re-using and recycling spent batteries is critical to improving resource efficiency, and recovering relevant materials to produce new batteries or other products.

What's more, most batteries contain materials that are often extracted outside of the European Union. To avoid supply chain disruptions and dependence on third countries, and to ensure the highest health, environmental and social standards, waste treatment must be a viable part of a both dynamic and responsible sourcing culture.

^{1,2,3} Global Battery Alliance, ⁴ Eurostat