FACTSHEET

ADVANCED RECHARGEABLE BATTERY TECHNOLOGIES

BATTERY CATEGORIES

Primary batteries irreversibly transform chemical energy to electrical one. They cannot be reliably recharged. Primary batteries are mainly used:

in portable devices with low current drain

as intermittent energy source

in devices that are well away from an alternative power source

Common primary battery chemistries:

+ Zinc-based batteries
+ Lithium-based batteries

Secondary batteries can restore their original composition thanks to their chemical properties. They are mainly used in:

cordless powertools

robotics

e-communications

internet-of-things

stationary energy storage systems

electric mobility

Common secondary battery chemistries:

+ Lithium-based batteries
+ Lead-based batteries
+ Zinc-based batteries
+ Nickel-based batteries
+ Sodium-based batteries

Advanced rechargeable batteries are a key technology in an increasingly electrified world. They are a main enabler for the transition towards low-emission mobility and decarbonized energy generation, and power an endless number of everyday applications, such as smartphones, tablets, power tools and robots.

FROM THE CELL TO THE BATTERY

Batteries are made of assembled unit cells and come in different sizes and shapes. Portable batteries, for example, contain just several cells, while large industrial batteries can consist of hundreds of cells assembled in modules. The sound functioning of these modules, and hence the battery's performance, is managed by sophisticated electronic management systems, so-called BMS. BMS monitor and control important data and processes to prevent the battery to work outside its safe operating mode.

INDUSTRIAL BATTERIES	Batteries exclusively used in industrial or professional applications, or in any type of electrical vehicle
AUTOMOTIVE BATTERIES	Batteries used for automotive starter, lighting or ignition power
PORTABLE BATTERIES	Any battery that is sealed, can be hand-carried and is neither an industrial nor automotive battery

Classification according to EU legislation

Depending on what a battery is used for, the technical features - and thereby material composition and battery morphology - vary. Some battery applications require light weight, others high power or very fast charging cycles. Important breakthroughs in battery technology and continuous improvements have led to a sheer endless number of battery-powered applications.

RESEARCH & INNOVATION

Technological advancements are a cornerstone of a vital battery industry. Hundreds of research & innovation projects in better materials technologies, superior lifetime performance or the optimal recovery of high-impact raw materials testament for the steady ambition of the European industry to produce batteries for a fast changing world.

RECHARGE actively contributes to the sustainable, competitive battery value chain in Europe by identifying, promoting and participating in relevant R&I projects. Discover more at www.rechargebatteries.org

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