Bess meaning battery

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Battery energy storage systems (BESS) are commonly referred to as stationary accumulators that can store and release electricity very flexibly. Depending on their design and size, they can be used and commercialized in very different ways.

In the energy industry, BESS are used for a variety of purposes such as balancing the supply and demand of energy in the grid, providing ancillary services, and enabling the integration of renewable energy sources.

Battery storage systems come in completely different scales - from fridge-sized residential battery storage systems to so-called battery storage power stations, large utility-scale systems that take up entire streets or industrial areas. Their storage capacity (the amount of energy that can be stored or released) and power capability (the speed at which the energy can be released) vary accordingly.

Technically, batteries of any size can be used for a wide range of applications. However, BESS must fulfill different regulatory requirements according to the area of application.

Depending on the specifications, they can be used for ancillary services such as grid stabilisation (frequency control) and peak shaving (load shedding), but also for load shifting and to increase the self-consumption of fluctuating renewable energies (wind and solar power).

Accordingly, their services can also be offered on various markets such as markets for ancillary services (e.g. the balancing energy market), capacity markets, or wholesale markets.

When talking about battery energy storage, people usually think of the battery cell where the energy is stored. Of course, this is the core component, but many more devices are required to ensure technically and economically sound use:

Various storage technologies are available on the market. This refers to the technology of the battery cells themselves. What they all have in common is that they store energy electrochemically. However, the technological differences bring different strengths and weaknesses with them. The choice of battery technology depends on the specific application and market conditions.

Many research centres and companies around the world are working on optimising existing BESS technologies and developing even more sophisticated ones. Solid-state batteries, for example, could revolutionise electromobility with even higher energy densities and shorter charging times than lithium-ion batteries.

As seen, all these technologies have different advantages and disadvantages - in terms of ecological, economic

and technical specifications such as raw materials, investment and maintenance costs, or capacity, capability and expectedlifespan.The specific requirements of every use case are key to the right choice.

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