



NEWS EUROBAT

THE QUARTERLY NEWSLETTER OF THE ASSOCIATION OF EUROPEAN AUTOMOTIVE AND INDUSTRIAL BATTERY MANUFACTURERS



Battery energy storage – the optimum solution in the energy transition

Energy security and climate change pose fundamental challenges for the future of Europe. EUROBAT, the Association of European Automotive and Industrial Battery Manufacturers, is convinced that renewable energy sources (RES) will play a key role to address these challenges. Their share in the European energy mix increased from 7.5% in 2000 to 15.3% in 2014, but there is still space for renewables to grow. However, the integration of renewables into the electricity grid is accompanied by problems in terms of grid stability, participation of consumers and new actors to the energy market and energy efficiency: **If Europe wants to maintain its global leadership role on renewable energy, it must lead on energy storage solutions.**

Energy storage from batteries (BES) can offer several important services at every level of the grid, increasing the share of

renewables in the energy mix and stabilizing the grid. Compared to other storage technologies, batteries are already available on the market to address the needs of TSOs (Transmission System Operators), DSOs (Distribution System Operators) and customers. Batteries do not require complex infrastructure projects, can offer mobile and scalable solutions and can be implemented in low-risk and environmental friendly conditions.

Batteries allow the owners of photovoltaic (PV) or wind generators to store the energy produced – when it is inexpensive and when it would be uneconomic to supply it to the grid – and then to release it when prices are higher, avoiding the curtailment of renewable energy. Batteries can provide ancillary services at transmission and distribution level, stabilising the grid and ensuring security of supply. At household level, a battery system connected to

a PV or small wind generator will increase the percentage of self-consumed electricity from about 30% without storage to around 60 to 70%.

All four batteries technologies – lead, lithium, nickel, sodium – can provide distinctive and important functions to grid operators and have the potential for significant further technological and economic improvement.

- **Lead-based batteries:** robust and less sensitive to application conditions, connectable in large battery arrangements without sophisticated management systems, low cost per kWh.
- **Lithium-based batteries:** extremely versatile, adaptable to practically any voltage, power and energy requirement, require sophisticated control electronics, but offer precise management and state of charge control in “smart” applications.
- **Nickel-based batteries:** serve special markets where energy must be stored in extreme climate or cycling or fast charging conditions, connectable in large strings without need for sophisticated management systems.
- **Sodium Nickel Chloride batteries:** relatively new technology, high specific energy, constant performance, cycle life in harsh operating environments, low maintenance requirement.



grid. Support for battery energy storage R&D, which should be directed at reducing costs and improving the cycle life and energy density of batteries, is crucial for the development of these technologies.

Despite being a readily available technology, battery energy storage is nowadays seriously limited in Europe mainly due to market and

legislative barriers. The existing regulatory framework for energy simply does not take into account energy storage: from the lack of a definition to double grid fees, from curtailment options to unequal balancing market, several measures should be taken to untap the potential of energy storage. **The upcoming Commission proposal on new energy market design is the**

right tool to address these barriers, launching at the same time a new deal for energy consumers to ensure the full participation of prosumers to the energy market.

The EU large scale storage market lags behind its international counterparts in the US and Japan, and the risk of dissipating the important knowledge and expertise of the European battery industry is concrete. As already stated by the European Commission itself, “European energy storage development requires new, European rules to enable its speedy development”; the debate on the Energy Union offers a valuable opportunity to advance the deployment of battery energy storage in Europe, implement a new energy market design, creating a favorable market environment and overcoming existing barriers ensuring the proper integration of renewables.

Overcoming existing barriers to tools ensuring the proper integration of renewables

There is still space for improvements of battery energy storage technology: cell-level and systems-level research could improve the business case for BES at all levels of the

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