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EUROBAT

## » Political framework for European market needed

**Across the last few years, grid-connected energy storage has emerged as a buzz issue for European and national policy makers, electricity providers, and the renewable energy sector in general. In the Commission's own words, "electricity storage is a clear key technology priority for the development of the European power system of 2020 and beyond, in light of the increasing market share of renewable and distributed generation and the growing limitations of the energy grid".**

To put it bluntly, if member states are to maintain grid stability and flexibility in their efforts to establish a decarbonized power sector, energy storage will have to be harnessed effectively.

This has been firmly recognized in several member states, with Germany introducing a €25 Million storage subsidy program in May 2013, Italy's Transmission and Distribution Service Operators (TSOs and DSOs) investing strongly

into large scale storage installations, and the UK Government launching several demonstration projects to test how storage can reduce pressure on the local electricity grid.

According to independent projections, these strong political signals are only "the tip of the iceberg"; with (for example) RWTH Aachen projecting not only short-term needs to stabilize the grid but also that an optimized European Electricity system with close to 100 percent renewable generation will eventually require short term hourly storage of 2,000 gigawatt hours (GWh).

A wide array of thermal, chemical, electrical, mechanical and electrochemical storage technologies are being developed to fulfil this demand. Whereas before, only large scale pumped hydro storage (PHS) systems were required for demand levelling at transmission grids, the integration of renewable energy sources into all levels of the grid has created new demand for smaller applications and generally more flexible storage technologies.

**Batteries are ready to stabilize the electricity grids**

## Some national commitments have already begun

At present, it's no exaggeration to claim that batteries are one of the technologies of choice to be installed in this capacity. A lot of the other (non-PHS) storage technologies being discussed are still in the development phase, while batteries of all technologies – lead, lithium, nickel and sodium – are already available in the market, and are ready to provide a mobile, flexible and scalable solution to answer the specific problems raised by renewable energy integration.

For this reason, Germany's storage subsidy program is specifically directed at lowering the upfront costs of battery systems, Italian TSO Terna has committed to implement 130 MW of battery energy storage in the next three years, and the UK is testing the impacts of a single 6 MW battery installation (the biggest in Europe) in an €22 Million project.

Roughly, we think that around 70 percent of EU funding for battery energy storage should be directed at technological improvements to existing and commercialized battery technologies, and their integration into different levels of the grid (both cell and systems-level research, including demonstration projects). The remaining 30 percent could then be used for basic materials research into new and untested battery concepts with the aim of further improving the four current technologies and developing new solutions.

Because some of these battery technologies have been around for over 100 years, we often heard that there are no gains to be made from investing into their continued development. This just isn't true – to take the example of lead-based batteries, there is real progress to be made through increasing their cycle life, charge acceptance and discharge performance, but also by evaluating their interactions with other components once integrated into the grid. The



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**Gains from investments in battery development**

These national commitments demonstrate the already pressing demand for energy storage technologies to be implemented at different levels of the grid, especially in countries where photovoltaic or other renewable energy sources have reached a high penetration level. EURO-BAT therefore advocates that a primary aim of EU policies and research and innovation (R&I) initiatives should be to improve the conditions for short-term market introduction of storage technologies into the European grid.

For the European battery sector, R&I should be directed as a priority towards improving the performance and cost of existing and commercialized battery technologies: lead-based, lithium-based, nickel-based and sodium-based batteries. This will improve the immediate business case for battery energy storage at the different levels of the electricity grid, and ensure that the demand for storage is able to be met as quickly as possible.

same is true for lithium-ion batteries, for sodium nickel chloride batteries as well as for nickel cadmium batteries. We here at EUROBAT are confident that each storage technology will have an important role to play in tomorrow's smart grid.

## A supportive and comprehensive framework for energy storage

Although the projections for Europe's future electricity storage market are large, there is still much to be accomplished to make sure they become reality. Across the next year, it will be crucial for EU and Member State regulators to establish a supportive and comprehensive market framework for storage technologies within the electricity sector.

For example, due to the liberalization of the European and national energy markets, we still need to establish energy storage as a separate

asset from generation and consumption, and afterwards take decisions on how such an asset should be defined. This will be possible through a combined effort of European industry and regulators in the coming months.

In parallel, it's also imperative that European industry is provided with continued opportunities to demonstrate the performance and competitiveness of different storage technologies as a flexibility option within the European grid. Demonstration projects will validate the combination of services that batteries can provide in this capacity, and as well as resulting in faster market deployment, would be valuable in bringing together the range of different stakeholders necessary for their full implementation.

### The aim is to maintain the strength of European battery industry

EUROBAT members already have several of these projects on-going at EU and national levels, and we're hoping to see even more being implemented over the next five years.

This type of support will optimize European industry's development of new and innovative technologies ahead of international competition. In the battery industry, competition over the

manufacture of advanced battery technologies is already strong, especially from Asia and the US, where the market support for grid-connected energy storage is already at a higher level. We really believe that the European battery industry can maintain a position of international strength in relation to grid-connected battery energy storage, but quick and decisive movement will be needed from all stakeholders.

Put simply, if political frameworks and industry standards for energy storage can be developed here first, European companies will be best placed to provide the technical solutions – whether in terms of battery cells, power electronics, management systems or other aspects. The foundations have already been built through the combination of ambitious EU climate policies, successfully implemented renewable energy sources across member states, and a shared determination to achieve security of power supply. Going forward, the challenge will be to ensure that energy storage is made into a commercial reality at all levels of the grid. **■**

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**"European battery industry can maintain a position of international strength"**

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