

# Metal-air batteries with more cycles and explicit demand for research funds are main conclusions of MaBIC17

- ✓ **MaBIC17 presentations have offered applied projects and increase their international character with researchers from more than 10 different countries.**

The MaBIC Congress on Metal-air batteries and energy storage, recently celebrated in Huesca, concludes presenting important advances in several technologies such as a growth of potential recharges and the demand of research funds to the Institutions in order to achieve faster progress.



The increasing capacity of the new Metal-air batteries for augmenting the number of cycles able to admit by providing safe and stable energy makes of this type of batteries, an ideal option to get closer to the demanding automotive industry for electrical vehicles widespread implantation. As Joaquín Chacón, CEO of Albufera Energy Storage (MaBIC Congress organizing company), said: "The main automobile brands are beginning to see these types of batteries as a possible substitutes for the current storage systems, in fact, several of them have contacted Albufera Energy Storage to take a special interest in the matter". In this area, highlights the example of Audi that has shown the commitment to assign all its research funds to the electric vehicle from 2025.

During the congress, held the WALQA Technology Park, it has been pointed out that Metal-air batteries are the most promising option to go beyond the Lithium-ion batteries and overcome some of their weaknesses. In these batteries one of its reactants is the oxygen of the air, which is very abundant, light and without cost. For these reasons, the specific energy of a Metal-air battery can be 7-8 times bigger than Lithium-ion battery, supplying, for example, an electric car, an autonomy approaching the 500 km objective, with an estimated cost less than € 100 / kilowatt hour. (The current price of Lithium-ion batteries is around 500 € / kilowatt hour for an average range of around 200 km).

### **European Policies**

The MaBIC17 Congress was also attended by Andreea Strachinescu, as a Head of Unit, DG Energy - Unit C.2 - New energy technologies, innovation and clean coal from European Commission, who explained that, in recent years, this institution has significantly increased the budget dedicated to energy storage research. Ms. Strachinescu has detailed that currently it is requested that R & D projects on energy storage solutions that access financing can be tested in conditions close to the real ones in the grid; and, if possible, be developed together with other flexibility measures such as demand response and enabling connections to other energy networks such as heat, gas, transport, etc.

The representative of the European Commission encouraged to be optimistic about its support in the future and explained that the Horizon 2020 Program currently finances more than 30 projects, totaling more than € 300 million dedicated to energy storage improvements and, in addition, to develop its flexibility and applications for the transmission and distribution grid.

### **ENERGY STORAGE IN AGRICULTURAL AND LIVESTOCK FARMS**

The Congress has also held a Technology Transfer session where several examples of agricultural and livestock farms initiatives have been exposed to reduce their energy costs. The design of online platforms for the monitoring of consumption and electricity bills, scheduling of production and pumping for irrigation, optimal adjustment of contracted powers, collective bargaining of contracts or reduction of costs through alternative energy and systems are some of these initiatives, especially implemented since in 2013 there was a large increase in the fixed term of power that doubled the costs of electricity supply in the farms.

This session has included several examples of solar energy irrigation pumping facilities, or to replace the use of diesel oil in a pig farm using a solar system and accumulation batteries. The project LIFE REWIND, a complete system that provides photovoltaic energy to the waste water treatment system of a warehouse and the pumping for irrigation of the vineyards, has also been shown. This project has a battery storage system and considers another system through the generation of hydrogen that is stored in a tank for the long term and used by an agricultural vehicle of the facility.

The activity of MaBIC17 concludes with a case study, which highlights the strategic importance of energy storage in agricultural and livestock farms, where energy storage systems reduce the period of amortization of self-consumption electrical installations in agricultural and livestock farms for several years.

The Congress has had the collaboration of several Aragonese entities such as the Hydrogen Foundation, the IAF, ITAINNOVA, the CIRCE, the WALQA Technological Park of Huesca and Motorland or the Aula Dei Foundation. In addition, several collaborating companies such as Bio-Logic Science Instruments, Vertex Technics, 3M Heat Management, or the Ecopilas Foundation have shown their services and solutions in the field of energy in exhibitors at the entrance of Congress.

### **SCIENTIFIC ACHIEVEMENTS in Scientific Council words...**

Francesca Soavi:

"Metal air batteries are playing a key role for the development of international sustainable energy policies. MaBIC brought together outstanding international research groups working in the field and represented a great networking event to consolidate strength and explore collaborations between Academies, Research Centers and Companies in the challenging topics of advanced materials and system design of advanced Metal-air batteries."

Richard Wills:

"MaBIC17 successfully brought together the international Metal-air battery community with representatives from the complete value chain, from materials development to end users. SME's, multi-national companies and academic research institutes combined to discuss all aspects of metal air batteries, from fundamental materials and mathematical modelling to large-scale pilot plants and commercially available batteries. Priorities for further developing metal-air batteries were highlighted within the context of portable electronics, automotive and stationary (bulk) storage."

Fátima Rosolem:

The third edition of MABIC, once again, provided the opportunity for the scientific community to exchange experience and present the advances in research being achieved in the Metal-air battery. This is an important forum because it brings together researchers from different countries, contributing to the diffusion of knowledge and exchange of experience, in order to accelerate innovation and technical solutions to enable this important disruptive technology.

Enrique Fatás, MaBIC chairman:

We can say that this third edition of the Metal Air Batteries International Congress (MaBIC'17) has been characterized by the presentation of a large number of papers of applied character and technological nature.

Thus, we have seen: A pilot plant based on a low cost and environmentally friendly Zinc Air Energy Storage System for renewable energy integration. The prototype of a combined power plant, based on the Aluminum-air electrochemical generator, for transport applications (EV) with low cost, large storage of energy and extended driving range. A new semi-solid flow Lithium oxygen battery, almost ready for market etc. In addition to these works, of almost immediate application, there have been excellent presentations of a more fundamental character. These represent important advances in one of the critical points of these batteries, the bi-functional oxygen electrode, as well as in other items related to the negative electrode, especially Li, which involve remarkable progress in understanding and possible solutions to some known drawbacks.