Green Tech Innovators Club

Aluminium-air batteries: new materials and perspectives

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albufera Energy Storage
Albufera Energy Storage is a Spanish start-up (SME) established in 2013 with the mission of providing battery systems to our customers including present and future technologies. Albufera focus on more demanding applications of present and near future:

• Deployment and integration of renewable energy

• Smart Grids

• Electric Vehicle
Green Tech Innovators Club
Hier entstehen grüne Innovationen! Technologieforum für Energie und Umwelt

OUR COMPANY

Three main lines of work:

• **Advising, Consulting, Engineering and Supplying:** Designing optimal energy storage systems based on commercial available battery technologies and hybrid configurations.

• **Training:** organizing specialized courses as well as an annual congress on Metal-air batteries.

• **R&D:** mainly devoted to the development of Al-air batteries. We are currently participating in European and National projects and seeking for new collaboration for future proposals.
R&D Development of Aluminium-air batteries (*beyond Li-ion batteries*)

**Aluminium (anode)** 2.98 Ah/g 8.1 kWh/kg

Abundant, cheap, easily handled, non dangerous

\[ \uparrow \text{Specific energy (Wh} \cdot \text{kg}^{-1}) \]

\[ \downarrow \text{Cost (€ kWh}^{-1}) \]

**Oxygen (cathode)**

Weight liberation, inexhaustible reactant, cost reduction
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*Data: Phinergy AI-air mechanically recharged battery*
Manufacturing of Aluminium-air batteries

- Albufera is presently projecting the first production line for this technology in Spain, which will be commercialized in mid of 2018.

Investment: 3.5 M€

Production: 12 Million cells/year

10 Ah

1.5 V

-Innovative design
Development of rechargeable Aluminium-air batteries - Current projects

**ALIENA Project**
*(National Research Plan, Spanish Gov.)*

Al-air rechargeable technology validation in photovoltaic installations and comparison to Lead based technology.

**ALPAM Project**
*(Spanish Ministry of Defense)*

Integration and adaptation of the Al-air batteries for military portable devices.
R&D Development of rechargeable Aluminium-air batteries - Current projects

ALION: High specific energy Aluminium-ion rechargeable decentralized electricity generation source. NMP-13 call in H2020.
R&D  Development of rechargeable Aluminium-air batteries

Aluminium-air rechargeable cell (Licensed Patent by Albufera)

New perspectives

- Improve aluminium anode (morphology and composition)
- Improve advanced electrolytes
- Optimization of air electrode for non-aqueous advanced electrolytes
THANK YOU VERY MUCH FOR YOUR ATTENTION

Further Information:
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