BETTERY: a startup for innovative batteries from a presentation of Francesca Soavi

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On March 7 Francesca Soavi (francesca.soavi@unibo.it) delivered at our Department a report on the work done with Francesca De Giorgio, Alessandro Pastore, Alessandro Brilloni, and Federico Poli at the *Alma Mater Studiorum University of Bologna, (40132 Bologna, Italy)* to start the spinoff *BETTERY S.r.l. (74016 Massafra (TA), Italy,* info@bettery.eu*)*.

New generation batteries play a key role in modern global energy policies due to the fact that energy from renewable sources is intermittent (wind, sun, etc.) and, therefore, needs efficient storage systems. Among commercial products Lithium-ion batteries provide, at present, the highest energy values (250 Wh/kg) with an expected further improvement of 20-30% in the next few years. Further progress is expected from Lithium-Sulfur and Lithium-air batteries and from a new design of the cell (flux batteries). They will achieve, in fact, higher specific energies.

BETTERY pursues, indeed, this strategic line leveraging the know-how and products of the research activities of the mentioned team of the Laboratorio di Elettrochimica dei Materiali per l'Energetica (LEME) at the Dipartimento di Chimica Giacomo Ciamician of the Università di Bologna. BETTERY is in the process of developing NESSOX (NEw Semi-Solid flow Lithium OXygen battery) the lightest, highest specific energy and long lasting fluid battery ever reported. As a matter of fact NESSOX has a specific energy 5 times larger that that of commercial products thanks to the use of Lithium and Oxygen. The NESSOX cost is 150 €/kWh like that of commercial Lithium-ion batteries with in addition the advantage of a fast recharge through the refuelling of the internal liquid that can leverage on existing fuel distribution plants in addition to conventional recharge from electric networks.

An interview with Francesca can be seen from https://www.youtube.com/watch?v=xPwSd7rZVLw.

Related readings are

1) I. Ruggeri, C. Arbizzani, F. Soavi, A novel concept of Semi-solid, Li Redox Flow Air (O_2) Battery: a breakthrough towards high energy and power batteries, Electrochimica Acta, 206 (2016) 291–300.

2) F. Soavi, I. Ruggeri, C. Arbizzani, Design Study of a Novel, Semi-Solid Li/O_2 Redox Flow Battery, ECS Transactions, 72 (2016) 1-9

3) I. Ruggeri, C. Arbizzani, F. Soavi, Carbonaceous catholyte for high energy density semi-solid Li/O_2 flow battery, Carbon, 130 (2018) 749-757.

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