A sustainable storage solution for clean energy – JenaBatteries develops a metal-free battery

Increasing the flexibility of surplus renewable energy is one of the most pressing challenges for a successful energy transition. Green electricity requires sustainable storage systems. With its metal-free redox flow battery, JenaBatteries has developed a sustainable, safe and scalable storage solution that offers an alternative to conventional lithium-ion batteries and other metal-containing batteries.

Redox flow batteries (the term being composed of **Red**uction = the gain of electrons, **Ox**idation = the loss of electrons and **Flow** = liquid storage medium) are electrochemical energy storage systems. The innovative feature of JenaBatteries' redox flow battery is its metal-free storage material. The energy is not stored in fixed electrodes, but in a scalable system comprising tanks and electrochemical cells. Two tanks hold a saline solution, each containing different organic (metal-free) storage materials which function as anode and cathode. The solution is pumped through a cell for charging and discharging. In this way the electrons are bound and released again – the electricity is stored. Thus the battery capacity can be scaled independently of the rated battery power. The quantity of electrolyte determines the capacity of the flow battery, while the surface area of the cells and number thereof determine the power. Thus the battery offers a flexible energy storage solution for numerous applications.

The metal-free, organic salts in JenaBatteries' flow battery have been previously used in other areas, such as the automotive industry or agriculture. Unlike lithium, lead, hybrid, or vanadium-based batteries, batteries based on these organic salts do not contain any heavy metals or rare earth elements. This means they protect the environment and natural resources. The raw materials used in metal-containing batteries, e.g. cobalt, lithium or nickel, are often mined in unstable countries of origin under inhumane and environmentally harmful conditions. In contrast, with its metal-free, organic components, JenaBatteries' innovative flow battery can be produced entirely in Europe at low cost.

The metal-free flow battery offers further advantages. It is non-flammable, non-explosive and low maintenance. With a scalable capacity of 400 kWh to 10 MWh, power of 100 kW to 2 MW, and a service life of over 10,000 charge cycles, it is the ideal solution for industrial customers such as operators of wind turbines or photovoltaic systems. Flow batteries are to be integrated into numerous energy infrastructures and networks by 2030.

About the company

JenaBatteries GmbH is an innovative company in the field of stationary energy storage systems. Driven by the idea of developing a sustainable and cost-efficient energy storage solution, JenaBatteries was founded in 2013 by an interdisciplinary team of researchers from the Friedrich-Schiller University of Jena and market experts. The company develops large-scale redox flow batteries of 400 kWh and up. Following the successful product development phase, the company is ready to enter the market in 2021. Among stationary storage systems, the metal-free redox-flow battery offers a sustainable, uncritical alternative to conventional Li-ion batteries. Our business partners are Wirthwein AG and Ranft Gruppe. They invest in JenaBatteries and provide support in technological strategy. Find out more at: www.jenabatteries.de.

Follow us:
https://twitter.com/JenaBatteries
https://www.linkedin.com/company/jenabatteries-gmbh

Media contact:

Stefanie Drozdek
E-mail: contact@jenabatteries.de
Telephone: +49 3641 879 3520