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Spiraltec GmbH applies for patent for wound redox flow battery.

*Spiraltec GmbH has applied for a patent for a redox flow battery with a coiled, cylindrical design.*

The patent application was published by the German Patent and Trademark Office on 18.06.2020 as Patent Application (Offenlegungsschrift) DE10 2018 132 669 A1. The young company is an expert in spiral membrane modules and is now implementing this design for the flow battery.

Redox flow batteries are among the electrochemical energy stores. In this type of liquid battery, the electrolytes with redox active substances circulate in at least two half-cells separated by a membrane.

One of the advantages of the redox flow battery is the independent scaling of capacity and power, as the energy can be stored in external tanks. They are particularly suitable for the medium-term storage of energy, as they are not self-discharged and are not flammable.

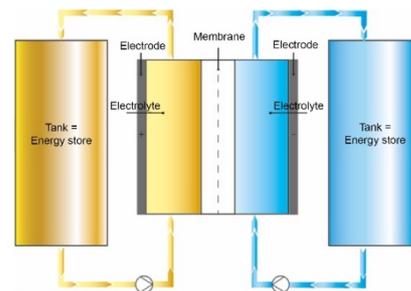


Fig.: Functionality of a redox flow battery

Up to now, the redox flow battery has been implemented in a flat geometry, as the design of the electrodes and the inlets and outlets was previously considered too complex for the cylindrical geometry (see above). However, since conventional membrane separation processes, without electrochemical processes, result in significant cost benefits due to the transfer from a flat geometry to a hollow fibre or tube geometry (examples are reverse osmosis, ultrafiltration, diffusion dialysis and also kidney dialysis) and this also applies to rechargeable batteries such as Li-ion batteries, it is logical to also realise these benefits for redox flow batteries.

Spiraltec GmbH is now the first company in the world to apply for a patent to develop a wound cylindrical geometry for a redox flow battery. The aim is to adapt the cost benefits that were achieved by Spiraltec GmbH in the development of spiral membrane modules for diffusion dialysis to the redox flow battery and thus develop economically attractive high-performance batteries for a wide range of applications.

In the process, strategic cooperation with partners from industry and research are helping to implement market-ready products in a timely manner. The main focus here is on membranes, electrodes and redox chemistry.

For the membranes required, the existing long-term close cooperation with FUMATECH BWT GmbH in the field of diffusion dialysis was extended to redox flow technology.

Further cooperation with partners is currently in the planning stage.