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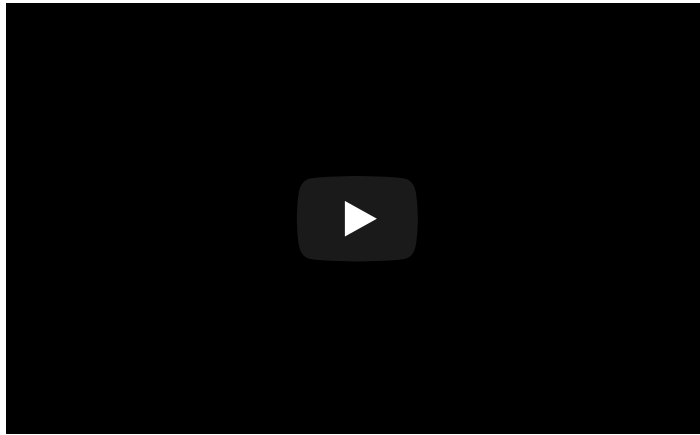


How does a GREENROCK saltwater battery work?

Technically, the GREENROCK saltwater battery is a sodium ion storage battery and is based on the sodium ion battery technology. The Sodium ion battery technology was invented at about the same time as lithium ion the battery technology. Within the sodium ion technology there are different types, the technology used by GREENROCK is the aqueous sodium ion technology, with an aqueous electrolyte consisting of sodium sulfate (Glauber's salt) and water (H₂O). This form of sodium ion battery technology is neither flammable nor explosive.

The salt water battery for 30 minutes over a gas flame.

Result: no risk of fire from the battery.

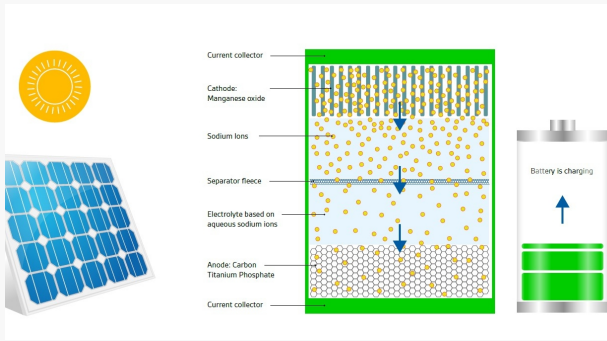


Structure and Function



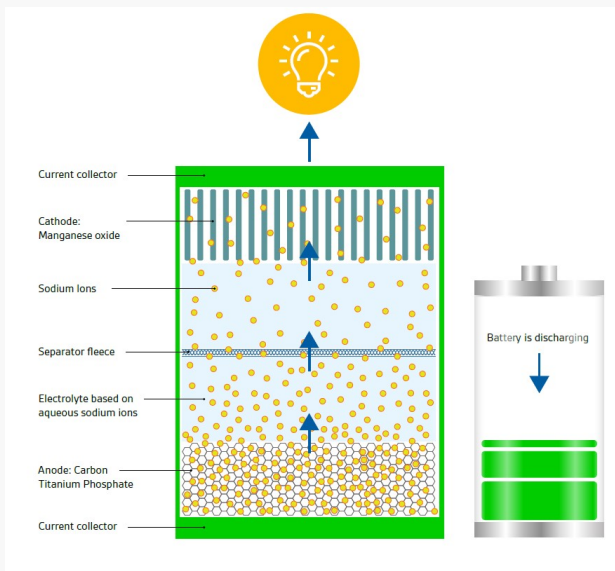
Structure

The cell of an aqueous sodium ion battery consists of an anode, cathode, electrolyte, separator, current collector and battery housing. Construction of the battery is similar to a lead-acid battery, except that the materials used are all non-toxic and environmentally friendly.



Charging

Operation of the battery is relatively simple. In the course of charging, the electrical energy reaches the battery chemistry via a current collector, thus the sodium ions migrate to the anode and settle in the anode grid.



Discharging

While discharging, the process is reverse. The sodium ions migrate to the cathode, the electrical energy flows from the battery via the current collector to the desired consumer.



Basics

Sodium-ion batteries have been successfully used in practice for years. Anyway, they are relatively unknown in relation to the lithium-ion and lead-acid batteries. The first researches and developments around the sodium ion battery technology already took place in the 1970s and 1980s.

Differentiation from other battery technologies

In a sodium nickel chloride battery is also sodium. But, the battery belongs to the thermal batteries and requires an operating temperature of 250 to 350 degrees Celsius. Whereby, the GREENROCK sodium ion battery operates at ambient temperature and no maintenance of high temperatures is required.

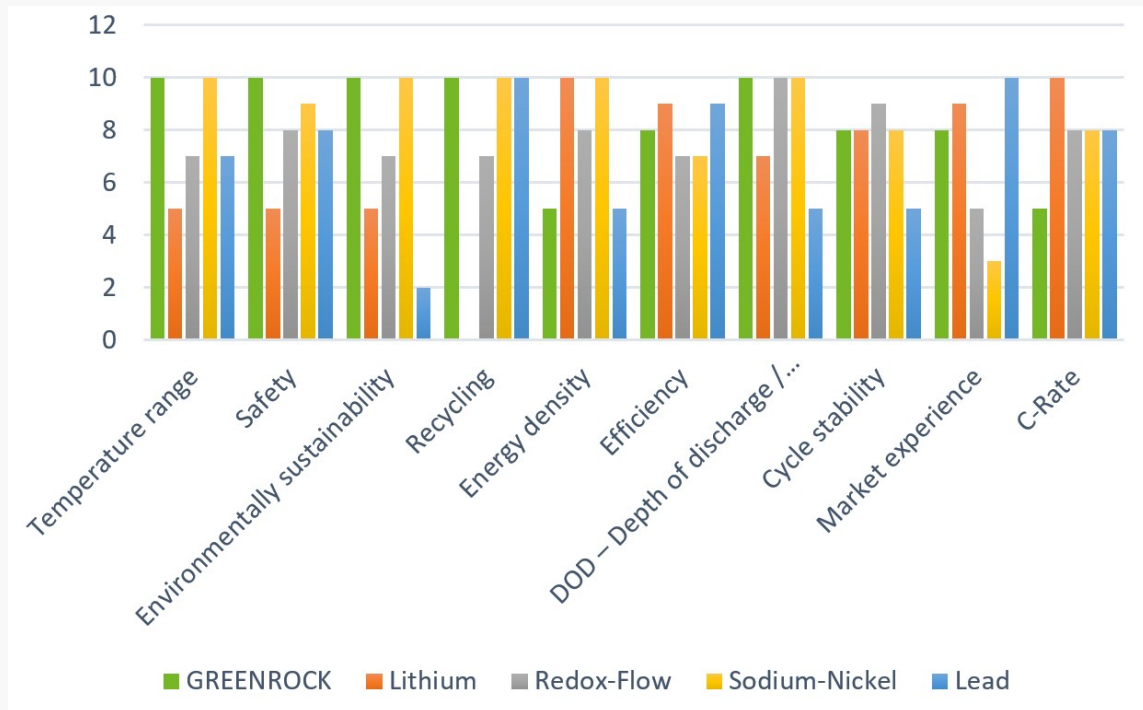
Some Redox-Flow-Batteries have sodium components. Flow batteries are based on two energy- storing electrolytes that circulate in separate circuits. In contrast to the redox flow batteries, the GREENROCK sodium ion battery has only one electrolyte, which does not circulate, so no moving parts (pumps) are necessary.

Comparison of battery technologies

The perfect battery technology does not exist, much depends on the case of application the battery technology is required for. Below we try to compare the different battery technologies based on the essential attributes. Only battery technologies that are available on the market were used for this comparison.

The sodium ion – GREENROCK salt water battery technology has two

disadvantages compared to other battery technologies. These are energy density (batteries are approx. twice as large as comparable lithium batteries) and C-rate (longer loading and unloading times). But, the sodium ion technology scores in the areas of safety, environmental compatibility and in the area of discharge depth.



Step towards energy independence. Be informed about saltwater electrical energy storage.

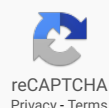
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