

60 kWh battery energy storage technology development

Sodium solid-state battery

Altech Batteries, an innovative enterprise based in Australia, recently unveiled the performance of its latest creation: the Cerenergy ABS60 sodium solid-state battery. Designed for excellence, this cutting-edge battery prototype is now in operation at the Fraunhofer IKTS test laboratory in Dresden, Germany.

The Cerenergy ABS60 battery distinguishes itself by using sodium ions derived from common table salt as opposed to lithium. The battery's cathode combines sodium chloride, or table salt, with nickel. This solid-state technology differentiates it from other sodium-ion and sodium sulfur batteries, which typically operate with liquid electrolytes.

Tests have shown that the 60 kWh sodium chloride battery integrated into a designated test station exhibits remarkable efficiency and stability. Over more than 500 charge-discharge cycles, it demonstrates an impressive efficiency rating of up to 91% while maintaining a consistent discharge capacity of 80 Ah.

The durability of the Cerenergy ABS60 battery is a significant highlight. Altech claims the battery has a projected lifespan of over 15 years. Notably, it functions efficiently across a wide ambient temperature range, from minus 20° Celsius (-4° Fahrenheit) to +60° Celsius (140° Fahrenheit). Importantly, it remains fire and explosion-proof, avoiding thermal runaway, a common issue in Lithium-ion batteries.

The ABS60 battery boasts an energy capacity of approximately 110-130 Wh/kg. This capability positions it as a viable rival to LFP Lithium-ion batteries, typically ranging from 90-110 Wh/kg. Furthermore, its 4-6 hour charge and discharge cycle is perfectly suited for grid storage applications. The battery system comprises 240 Cerenergy cells, each providing 2.58 V, equating to a sizable capacity for various implementations.

During the charging process, electrons traverse from the positive to the negative terminal. Concurrently, sodium ions migrate through a solid ceramic electrode to the negative canister, forming a molten anode layer. This process yields a fully charged battery.

In discharge, electrons return, and molten sodium oxidizes into Na^+ ions, reversing through the ceramic tube and reforming sodium chloride as the nickel chloride converts to metallic nickel.

Altech's Cerenergy ABS60 sodium solid-state battery marks a technological milestone with its groundbreaking use of sodium ions and solid-state technology. It promises enhanced safety, efficiency, and longevity, addressing several limitations of traditional battery technologies. With continued testing and refinement, this battery could well redefine standards in grid storage and renewable energy markets.

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Altech Batteries Limited (ASX: ATC, FRA: A3Y) is pleased to announce that its first CERENERGY(R) ABS60 battery prototype is online and operating successfully. The completed battery unit has passed all physical tests with flying colours. The prototype was installed at Altech's joint venture partner Fraunhofer IKTS" test laboratory in Dresden, Germany, and integrated into a specially designed battery test station. This setup enables continuous daily charging and discharging cycles to assess the battery's efficiency, stability, and overall performance under real-world conditions.

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Web: <https://kary.com.pl/contact-us/>

Email: energystorage2000@gmail.com

WhatsApp: 8613816583346

