



Principal Investigator

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Adopted Theme

Commercialization of the world's first large-capacity energy storage system using CO₂ and carbon

Subject of Research

Commercialization of the world's first large-capacity energy storage system using CO₂ and carbon

GTIE VC Collective

Mirai Sozo Investments

Overview



To further accelerate the realization of a decarbonized society, we aim to commercialize the world's first "carbon/air secondary battery (CASB) system", as a medium- to large-scale energy storage system that can be compact and low-cost.

The CASB system, proposed and demonstrated for the first time in the world by the Principal Investigators, is a novel energy storage technology that uses the redox reaction: $C + O_2 \rightleftharpoons CO_2$ for charging and discharging by solid oxide fuel cell/electrolytic cell (SOFC/SOEC) (patent obtained for the principle). The CASB system consists of a SOFC/SOEC as the charge/discharge section, carbon and CO₂ which is easily liquified as the active materials. The CASB system has overwhelming advantages in principle to the other energy storage devices/systems in terms of miniaturization in particular, lower cost, and not being limited by the supply of rare metals.

Business Models (when applying)

We have already confirmed the strong needs of potential customers, especially those who are facing urgent issues due to the oversupply of renewable energy.

Therein, during the term of this grant project, we quickly develop a prototype of a demonstration machine of the CASB system and proceed with verification tests with potential customers, aiming to bring the machine to market as soon as possible after the start-up of the business.

Activity Planning (when applying)

The business model includes manufacturing and sales of SOFC/SOEC components which is the core of the CASB system as well as the integration, such as construction and implementation of storage battery systems tailored to customer requirements.

In the future, the company will acquire battery operation data and provide value-added services such as automatic diagnosis using AI and control programs to compensate for deterioration. In addition, the value of the CASB system will be maximized in conjunction with the "Ene-Swallow®" intelligent energy system business, which is being developed separately.