

October 28, 2024
Idemitsu Kosan Co.,Ltd.

Basic Design of Large Pilot Facility Begins for Commercialization of solid electrolytes for All-Solid-State Batteries in 2027-2028

Idemitsu Kosan Co.,Ltd. (Head Office: Chiyoda-ku, Tokyo; Representative Director, President and CEO: Shunichi Kito; hereinafter referred to as “Idemitsu”) started basic design of a large pilot facility for solid electrolytes, a material used in all-solid-state lithium-ion rechargeable batteries (“all-solid-state batteries”) in October this year with the goal of commercialization of such batteries in 2027 to 2028. The production capacity is expected to be several hundred tons per year, one of the world's top-class production scales. The Final Investment Decision (FID) is expected by the end of 2025, and construction is targeted for completion in 2027. By vigorously promoting the development of mass production technology for solid electrolytes, Idemitsu will steadily meet the needs of automakers and battery manufacturers.

In the collaboration with Toyota Motor Corporation announced in October 2023*, we aim to commercialize electric vehicles (“EVs”) equipped with all solid-state batteries in 2027-28. The solid electrolytes produced by Idemitsu’s large pilot facility are planned to be used in all solid-state batteries for EVs to be developed by Toyota Motor Corporation.



Solid electrolytes



Chiba Complex
(Planned site for the large pilot facility)

Compared to conventional liquid batteries, all-solid-state batteries have solid electrolytes, which allows ions to move faster. Therefore, EVs equipped with all-solid-state batteries are expected to have the potential to reduce charging time in rapid charging and increase power output. In addition, because they are resistant to high voltage and high temperature, all-solid-state batteries are expected to improve energy density and further lengthen service life.

Idemitsu is developing solid electrolytes, which are essential materials for all solid-state batteries that contribute to the evolution of EVs and the creation of a resource-recycling society. The plan is to scale up the production equipment step by step from small pilot facilities to a large pilot facility, and then move on to commercialization.

Currently, two plants are in operation in Chiba Prefecture as small pilot facilities to develop mass production technology and supply samples, and now we have begun the basic design of the next stage, a large pilot facility. The construction of the large pilot facility is scheduled to take place on the site of our Chiba Complex (Ichihara City, Chiba

Prefecture). The site grading work was commenced in July of this year. In addition, a new organization called the “Pilot Plant Project” has been established within our Lithium Battery Material Department, aiming to complete the construction of the large pilot facility by the end of 2027 and to strengthen our supply system.

Idemitsu’s solid electrolytes are made from sulfur components, a byproduct of the petroleum product manufacturing process. Idemitsu was among the first to discover the utility of sulfur components in the mid-1990s, and through our research and technological capabilities cultivated over many years, we have succeeded in developing solid electrolytes. The technological development for mass production of solid electrolytes has been adopted as one of the NEDO’s “Green Innovation Fund Projects / Development of Next Generation Storage Batteries and Motor Development.”

We are also preparing to strengthen its production capacity for lithium sulfide, the raw material for solid electrolytes, with the goal of making a decision by the end of the fiscal year.

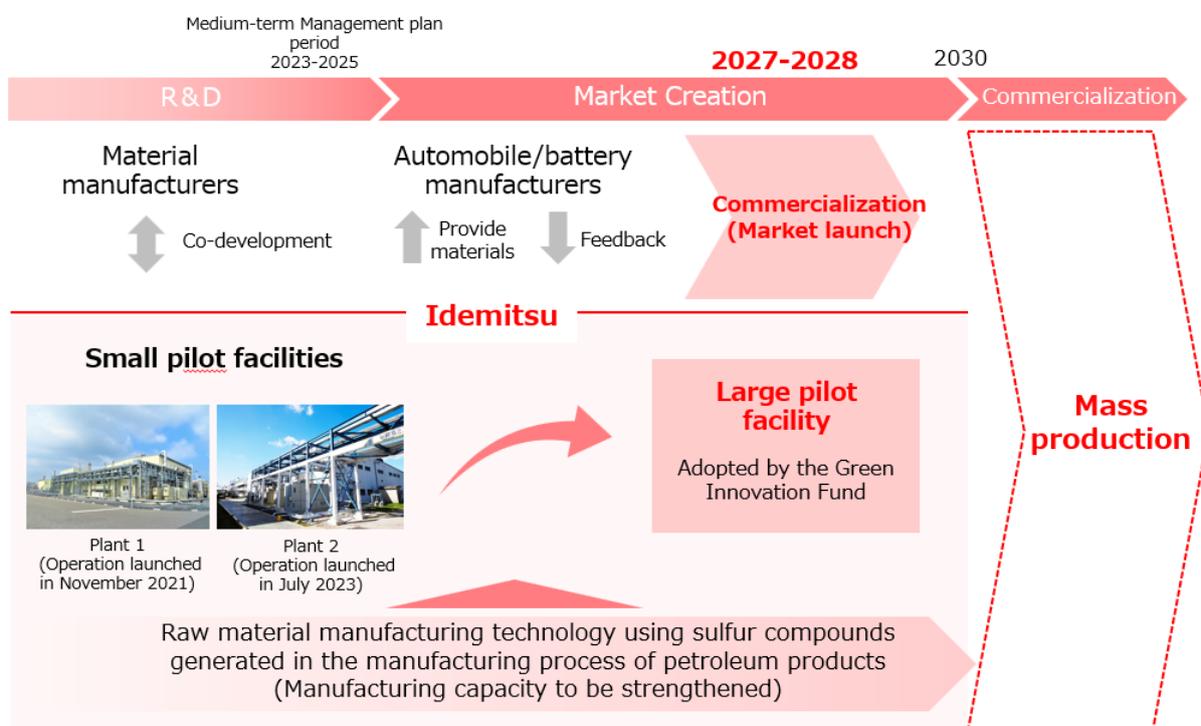
Idemitsu will promote the establishment of an integrated supply chain from raw materials to finished products, aiming for the social implementation of all-solid-state batteries.

*Dated October 12, 2023

Idemitsu and Toyota Announce Beginning of Cooperation toward Mass Production of All-Solid-State Batteries for BEVs

<https://www.idemitsu.com/jp/content/100043690.pdf>

[Reference] Illustration of the Project



- Contact for Inquiries on this subject -

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https://www.idemitsu.com/jp/contact/newsrelease_flow/index.html