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<news release>

Suntory Holdings Limited

TOKYO GAS CO.,LTD

Tokyo Gas Engineering Solutions Corporation

**Suntory, Tokyo Gas and Tokyo Gas Engineering Solutions Achieve
High-purity Recovery of CO₂ Generated by Distillation Process at
Suntory Hakushu Distillery**

**- First successful CCU pilot demonstration using solid sorbent process^{*1} in the
beverage industry in Japan -**

Tokyo, JAPAN (September 24, 2024) – Suntory Holdings, Tokyo Gas and Tokyo Gas Engineering Solutions (TGES) today announced they have succeeded in the pilot demonstration of high-purity recovery of CO₂ that was generated during the distillation process at Suntory Hakushu Distillery. By applying the solid sorbent process^{*1}, the companies have succeeded in separating and recovering low-concentration CO₂ generated in the distillation process at a high purity of 99.5% or higher. This is the first time in Japan that the solid sorbent process has been used to recover high-purity CO₂ in the beverage industry.

CCU (Carbon Dioxide Capture and Utilization) is a technology that separates, captures, and effectively utilizes CO₂ emitted from various facilities, and is currently drawing attention for its contribution to reducing greenhouse gas(GHG) emissions by recycling the exhausted CO₂.

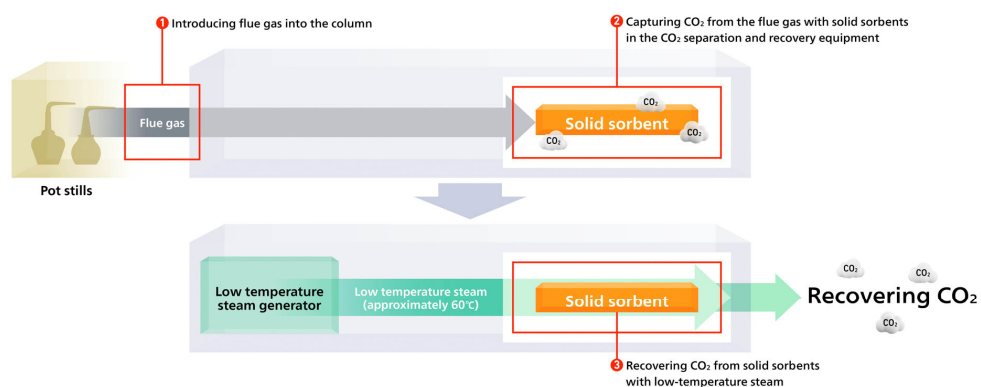


CO₂ separation and recovery equipment

This high-resolution image has been posted on <https://www.suntory.com/news/index.html>

The solid sorbent process used in this pilot demonstration is one of the CCU methods characterized by its ability to separate and recover CO₂ at approximately 60°C, a relatively low temperature compared to other methods. In the future, the separation and recovery process is expected to be operated with low energy by utilizing low-temperature waste heat from surrounding facilities.

In this pilot demonstration, a small-scale CO₂ separation and recovery device, which was developed in a joint effort by Tokyo Gas, TGES, Miura Industry Co. (Miura) and Research Institute of Innovative Technology for the Earth (RITE) was used. The device was designed by Miura, which utilizes a solid sorbent*² developed by RITE.



CO₂ separation and collection flow using solid sorbent process

This high-resolution image has been posted on <https://www.suntory.com/news/index.html>

Moving forward, the companies will verify how to effectively utilize the captured CO₂ on-site (on-site CCU*³) to ensure circularity of resources. Based on the results of this pilot demonstration, Suntory Group also plans to consider which sites and production processes to utilize CCU technology. Through this initiative, Suntory, Tokyo Gas, and TGES will contribute to the realization of a carbon-neutral society.

Masaaki Fujiwara, Chief Sustainability Officer of Suntory Holdings comments,

“Suntory Group aims to achieve net-zero GHG emissions across its entire value chain by 2050, as outlined in our Environmental Vision toward 2050. To achieve this goal, we are continually testing various methods and technologies such as renewable energy, and we see CCU as a new technology that can contribute to achieving this vision. We are also collaborating with the Tokyo Gas Group on the utilization of hydrogen technology, working together toward our common goal of carbon neutrality.”

Kazuhisa Okamoto, Managing Executive Officer of Tokyo Gas Engineering Solutions Corp. comments,

“We are very pleased to have the opportunity to collaborate with Suntory Group not only on the utilization of hydrogen technology but also on the application of CCU technology. Last November, the Tokyo Gas Group launched the solution brand IGNITURE to propose optimal solutions tailored to each customer regarding decarbonization, optimization, and resilience, going beyond the boundaries of the energy field. Additionally, in the Carbon Neutrality Roadmap 2050, announced this March, we committed to collaborating with customers across various domains. Moving forward, we will continue to work together towards realizing Suntory Group's sustainable and smart business.”

Roles of each company in this pilot demonstration

Suntory Group: Provision of the pilot demonstration site and support throughout the process

- Providing a pilot demonstration test environment connected to the production process and utilities*⁴ (including modifications to some manufacturing facilities)
- Establishing standards and evaluation criteria for the pilot demonstration
- Verifying the outcomes of the pilot demonstration

Tokyo Gas/TGES: Overall supervision and lead of pilot demonstration

- Formulating concepts and development policies
- Joint development of the CO₂ separation and recovery device with RITE and Miura
- Conducting the pilot demonstration
- Analyzing the quality of the recovered CO₂

Suntory Group and Tokyo Gas Group also collaborated in the [world's first direct-fired distillation trial using 100% hydrogen for whisky production](#) at Suntory Yamazaki Distillery in April.

- *1 One of the major CO₂ separation and recovery technologies, in which CO₂ is separated and recovered using amines, a solid absorbent material that can selectively absorb CO₂ with its porous characteristic. Other separation and recovery technologies include methods such as the chemical absorption method.
- *2 A solid in which amine is supported on a porous carrier such as silica or activated carbon. It was developed by improving the solid sorbent created by RITE, which was a result of a commissioned project by the New Energy and Industrial Technology Development Organization (NEDO).
- *3 To separate, capture and utilize the emitted CO₂ on-site.
- *4 Utilities such as air, water and electricity required to support the operation of production facilities at the factory.

About Suntory Group

As a global leader in the beverage industry, Suntory Group aims to inspire the brilliance of life, by creating rich experiences for people, in harmony with nature. Sustained by the gifts of nature and water, the Group offers a uniquely diverse portfolio of products, from award-winning Japanese whiskies Yamazaki and Hibiki, iconic American whiskies Jim Beam and Maker's Mark, canned ready-to-drink -196, The Premium Malt's beer, Japanese wine Tomi, and the world-famous Château Lagrange. Its brand collection also includes non-alcoholic favorites Orangina, Lucozade, Oasis, BOSS coffee, Suntory Tennensui water, TEA+ Oolong Tea, and V energy drink, as well as popular health and wellness product Sesamin EX.

Founded as a family-owned business in 1899 in Osaka, Japan, Suntory Group has grown into a global company operating throughout the Americas, Europe, Africa, Asia and Oceania, with an annual revenue (excluding excise taxes) of \$20.9 billion in 2023. Its 41,511 employees worldwide draw upon the unique blend of Japanese artisanship and global tastes to explore new product categories and markets.

For more information, visit www.suntory.com and [Drink Smart](#).



About TOKYO GAS CO.,LTD

Tokyo Gas Co., Ltd. is the largest city gas supplier in Japan and a Japanese integrated energy company with diverse businesses spanning electricity generation, energy retailing, engineering solutions, upstream LNG, and real estate development. As part of our group's management vision "Compass 2030," we have been taking action to realize a decarbonized society by tackling the challenge of achieving "Net-Zero CO₂." As an infrastructure provider for the Tokyo metropolitan area, we support our customers' decarbonization efforts by promoting the sophisticated use of LNG. At the same time, we focus on renewable energy power plant development, CCUS utilization, hydrogen production technology development, and commercialization of e-methane and other hydrogen carriers. Tokyo Gas will lead the transition to a decarbonized society by achieving both stable energy supply and decarbonization.

For more information, visit www.tokyo-gas.co.jp

About Tokyo Gas Engineering Solutions Corporation

Tokyo Gas Engineering Solutions (TGES) is a global engineering company based in Japan. We focus on energy efficiency and sustainability, providing innovative energy solutions. Our aim is to offer customized solutions to meet customer's needs while considering the environment.

We provide end-to-end services for energy solutions and value collaboration with local communities. We work towards achieving sustainable energy solutions by addressing challenges such as global warming and energy security. By combining our technical expertise with community vitality, we contribute to a sustainable society.

TGES is a leader in the energy industry, constantly pursuing innovation to realize a sustainable future. We provide solutions that add value to the customer's businesses and improve energy efficiency. We are committed to further growth and development.

For more information, visit www.tokyogas-es.co.jp/en