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Mitsubishi Electric Signs Collaboration Agreement with ITRI and TTL Jhunan Brewery in Taiwan for Demonstration Tests of the Capture and Utilization of CO_2

Will contribute to carbon recycling by capturing and utilizing CO_2 in a beer production line

From left: Chih-Wen Liu, General Director, Green Energy and Environment Research Laboratories, ITRI; Hiroyuki Hashimoto, Deputy Senior General Manager, Advanced Technology R&D Center, Mitsubishi Electric; Chi Chung Yang, Director, TTL Jhunan Brewery

TOKYO, August 25, 2025 – Mitsubishi Electric Corporation (TOKYO: 6503) announced today that it has signed a collaboration agreement with the Industrial Technology Research Institute (ITRI) and the Taiwan Tobacco & Liquor Corporation (TTL) Jhunan Brewery covering their planned demonstration tests of the process of capturing and utilizing CO_2. Under this agreement, Mitsubishi Electric, ITRI and TTL will capture CO_2 emitted from TTL Jhunan Brewery and purify it for use in a beer production line, aiming to thereby achieve carbon recycling.

In April 2024, Mitsubishi Electric and ITRI concluded a basic agreement to cooperate on research targeting sustainability technologies. Since then, they have been engaged in research and development of carbon dioxide capture and utilization (CCU) technology. In June 2025, Mitsubishi Electric installed a CO_2 capture machine developed by ITRI at its Advanced Technology R&D Center in Amagasaki, Hyogo Prefecture, and commenced demonstrations of the capture of CO_2 from the flue gas of a gas boiler.*

* https://www.MitsubishiElectric.com/en/pr/2025/pdf/0609.pdf

As the next step towards the widespread implementation of CO_2 capture technology from flue gases, Mitsubishi Electric and ITRI have signed a collaboration agreement with TTL Jhunan Brewery covering the planned demonstration tests of the process by which TTL Jhunan Brewery will capture and utilize the CO_2 emitted during its beverage manufacturing process.
Under this agreement, the three parties will work on establishing technologies to capture CO_2 from the flue gas of a gas boiler at TTL Jhunan Brewery and to purify the captured CO_2 for use in a beer production line. They will also research the technical challenges and the economic feasibility of capturing and utilizing CO_2. Through these demonstration tests, Mitsubishi Electric and ITRI aim to accelerate the research and development of CCU technology, while TTL Jhunan Brewery seeks to reduce CO_2 emissions from its factory and expand the potential use of captured CO_2 in its own factory.

Mitsubishi Electric will further accelerate research and development aimed at achieving the wider implementation of an entire carbon dioxide capture and utilization system that handles all processes involved in the capture and utilization of CO_2. In the future, Mitsubishi Electric will combine this knowhow with our Energy & Facility solutions, and will work to respond to the demand for carbon recycling from factories and plants. Going forward, with the goal of realizing sustainable society, Mitsubishi Electric will continue to accelerate its "Trade-On" activities to simultaneously address technical issues in modern society and achieve business growth.

Overview of the Demonstration Tests

Scope	・Establishing technologies to capture CO_2 from the flue gas of a gas boiler at TTL Jhunan Brewery and purify the captured CO_2 in order to make use of it in a beer production line. ・Researching the technical challenges and the economic feasibility of capturing and utilizing CO_2.	
Roles	Mitsubishi Electric	Designing an efficient CO_2 capture and utilization process and an optimal control based on the operational data sourced during the process.
	ITRI	Development of the solid amine adsorbents** required for CO_2 capture, implementation of the CO_2 capture and utilization process, and preventive maintenance of the process.
	TTL Jhunan Brewery	Provision of flue gas from a gas boiler and resources necessary for the demonstration, such as electricity and water, and validating the applicability and purity of the captured and purified CO_2 for beer.

** A material that supports amines on a porous body, capable of adsorbing CO_2 and releasing it when heated or depressurized.

Future Development

In the future, Mitsubishi Electric, ITRI and TTL Jhunan Brewery will determine the specifications of the CO_2 capture and utilization process and the detailed roles of each party, aiming to commence demonstration tests at the TTL Jhunan Brewery in 2026.

About Industrial Technology Research Institute

ITRI is a non-profit organization headquartered in Hsinchu County, Taiwan. With approximately 6,000 researchers, it is one of the world's leading applied research institutions, focusing on scientific and technological research and development, promoting industrial development, creating economic value, and enhancing social welfare. For more details, please visit https://www.itri.org/eng.

About Taiwan Tobacco & Liquor Corporation

TTL is a state-owned enterprise that produces and sells tobacco and alcoholic beverages in Taiwan. Its most famous product is Taiwan Beer, but it also produces wine, sake, Chinese liquor, whiskey, rum, etc.. The Jhunan Brewery is the largest of the 17 TTL's factories. For more details, please visit https://en.ttl.com.tw.

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About Mitsubishi Electric Corporation

With more than 100 years of experience in providing reliable, high-quality products, Mitsubishi Electric Corporation (TOKYO: 6503) is a recognized world leader in the manufacture, marketing and sales of electrical and electronic equipment used in information processing and communications, space development and satellite communications, consumer electronics, industrial technology, energy, transportation and building equipment. Mitsubishi Electric enriches society with technology in the spirit of its "Changes for the Better." The company recorded a revenue of 5,521.7 billion yen (U.S.$ 36.8 billion*) in the fiscal year ended March 31, 2025. For more information, please visit www.MitsubishiElectric.com

*U.S. dollar amounts are translated from yen at the rate of ¥150=U.S.$1, the approximate rate on the Tokyo Foreign Exchange Market on March 31, 2025