

Commencement of Research to Demonstrate Simple Measurement and Visualization of Methane Concentration to improve Nature-Based Carbon Credit Projects

~ Efforts to Enhance the Reliability of Carbon Credits Using Tokyo Gas Group's Proprietary Technology ~

Tokyo Gas Co., Ltd.
Tokyo Gas Engineering Solutions Corporation

Tokyo Gas Co., Ltd. (President: Shinichi Sasayama, hereinafter 'Tokyo Gas') and Tokyo Gas Engineering Solutions Corporation (President: Yasuhiro Konishi, hereinafter 'TGES') have commenced demonstration research on simple measurement and visualization of methane concentration to improve Nature-Based carbon credit projects using Tokyo Gas Group's proprietary laser-based methane detection technology^{*1} and numerical fluid simulation technology (hereinafter 'this method'). Additionally, Tokyo Gas and TGES have been commissioned by the Japan Aerospace Exploration Agency (hereinafter 'JAXA') to evaluate whether this method can be utilized as a simple measurement technique for changes in methane emissions from rice paddies^{*2}. Through these efforts, the Tokyo Gas Group aims to establish a simple and highly accurate methane emission measurement technology (hereinafter 'this technology') and contribute to enhancing the reliability of carbon credits by widely utilizing this technology for the quantitative evaluation of carbon credits created through methane emission reductions.

【 Background 】

Recently, in efforts by companies and municipalities to achieve carbon neutrality, the use of carbon credits has been advancing in addition to efforts to reduce their own greenhouse gas emissions. However, the creation and utilization of carbon credits are still in the process of international rule development, and the need for highly reliable carbon credits that consumers can use with confidence is greater than ever. This technology is expected to significantly contribute to substantiating the reliability of carbon credits by being used for the quantitative evaluation of carbon credits created through methane emission reductions.

【Tokyo Gas Group's Technology and Expertise Utilized in This Method】

The laser-based methane detection technology instantly detects the presence of methane gas by irradiating infrared laser light absorbed by methane gas and measuring the absorption amount of the laser light scattered by the ground. It is also widely used for city gas leak inspections. This method involves analyzing data measured by laser-based methane detection technology and reproducing the diffusion of methane emitted from rice paddies using high-precision numerical fluid simulation technology developed by Tokyo Gas through thermal environment evaluations. This allows for consideration of the surrounding environment and enables an accurate evaluation of the emission reduction effect.



Measurement in rice paddies (bottom right is the measuring device)

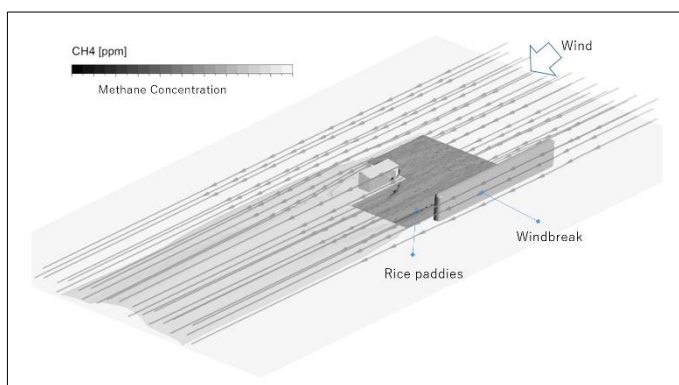


Image of numerical fluid simulation

By establishing this technology, it will be expected to widely enhance the reliability of the created carbon credits including AWD^{*3}, various carbon credit creation requiring methane measurement^{*4}, and carbon insetting^{*5}.

In its management vision 'Compass2030,' the Tokyo Gas Group has set forth the challenge of achieving net-zero CO2 emissions from all of its business activities, including at customer sites. We will continue to contribute to the realization of '2050 Carbon Neutrality' as set forth by the Japanese government, together with our customers.

The Tokyo Gas Group celebrates its 140th anniversary in 2025. We will continue to take on challenges as a company that goes beyond Tokyo, beyond gas, and anticipates the future.

*1: Development of a new series of laser-based gas detectors 'Laser Methane Smart' (announced by TGES and Gastar Co., Ltd. on June 16, 2022) Promotion of remote gas detection using laser technology (announced by TGES on December 1, 2023) <https://www.tokyo-gas.co.jp/news/press/20220616-01.html>

Smart Security Laser Methane Series

*2: JAXA, in cooperation with the Ogata Village Akita Komachi Producers Association in Akita Prefecture, is using satellite data to ascertain the presence or absence of flooding in rice paddies. This is a demonstration project aimed at enhancing the reliability of carbon credits created by reducing methane emissions from rice paddies through mid-season drainage, which involves temporarily draining water from rice paddies to dry the soil during rice growth. In this project, Tokyo Gas has been commissioned to evaluate whether its efforts can be utilized as a simple measurement method for changes in methane emissions from rice paddies.

*3: Tokyo Gas is focusing on the Alternate Wetting and Drying (AWD) method, which is one of the methodologies for creating carbon credits by reducing methane emissions from rice paddies, and is participating in a joint verification project based on a private JCM in the Philippines in 2024. Joint Demonstration on Methane Emission Reduction from Rice Paddies in the Philippines (announced on February 28, 2024) <https://www.tokyo-gas.co.jp/news/press/20240228-01.html>

*4: Envisioned to promote the reduction of methane emissions in natural environments such as peatlands.

*5: Efforts by companies to reduce greenhouse gas emissions within their own supply chains (published by the Ministry of Agriculture, Forestry and Fisheries)

https://www.maff.go.jp/j/kanbo/kankyo/seisaku/climate/jcredit/attach/pdf/240417_3-4.pdf

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■ Tokyo Gas's Efforts to Ensure the Reliability of Carbon Credits

Tokyo Gas has established its own carbon credit evaluation standards and conducts evaluations by referencing internationally reliable standards such as Verra and Gold Standard, as well as guidelines from ICVCM^{*6}, CCPs^{*7} and related rating services, in an additive manner.

Additionally, Tokyo Gas has created the 'Tokyo Gas Carbon Offset City Gas Calculation Rules' and conducts third-party verification based on these rules by the Japan Quality Assurance Organization.

■ About the Solution Business Brand 'IGNITURE'^{*8}



In November 2023, Tokyo Gas and TGES launched the solution business brand 'IGNITURE' for the full-scale deployment of solutions. The solutions deployed under 'IGNITURE' allow households, corporations, and regional communities to achieve 'a richer future through improved economic efficiency, convenience, and efficiency through optimization' and 'sustainable living and business through decarbonization and enhanced resilience' without difficulty.

*6: Abbreviation for Integrity Council for the Voluntary Carbon Market. Integrity Council for the Voluntary Carbon Market.

*7: Abbreviation for Core Carbon Principles. Core Carbon Principles. An international standard for providing reliable carbon credits, aimed at ensuring transparency and environmental integrity throughout the entire process from project design to monitoring and credit issuance.

*8: For more details on IGNITURE, visit <https://igniture.tokyo-gas.co.jp/>

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