

DMT Clear Gas Solutions explains how it helped Hawai'i Gas become the first company in the state to capture and upgrade biogas from wastewater treatment

Hawai'i's first RNG facility

In 2019, Hawai'i Gas became the first in its state to capture and upgrade biogas, using DMT Clear Gas Solutions' membrane separation equipment, the Carborex[®]MS. In partnership with the City and County of Honolulu, the first-of-its-kind renewable natural gas (RNG) facility is equivalent to eliminating the need for 15,000 barrels of oil and reducing greenhouse gas (GHG) emissions by the amount produced by 400 cars annually.

"The ability to capture biogas from our sewage and transform it into RNG is the type of innovative project that will help us reach our renewable energy goals sooner rather than later," said Mayor Kirk Caldwell, City & County of Honolulu.

The Honouliuli Wastewater RNG facility produces about 800,000 therms of energy per year, enough gas for 6,000 homes. Through DMT's two-stage membrane separation technology, biogas from two anaerobic digesters is processed and upgraded to a purified RNG stream of up to 97%. The pipeline-specification RNG is then injected into Hawai'i Gas' O'ahu utility pipeline to provide thermal energy for homes and businesses.

"This project started back in August 2015 when the City and County of Honolulu came out with a Request for Proposal (RFP) to sell their biogas," said Richard DeGarmo, director of renewable energy and capital projects at Hawai'i Gas. "In September 2016, we were awarded the project and by December 2018, it was up and running."

By selling the biogas to Hawai'i Gas, the City and County of Honolulu

estimates they will generate approximately \$1.6 million (€1.47 million) of revenue per year. This \$5 million (€4.59 million) project harvests waste energy that was previously being flared off into the atmosphere. Hawai'i Gas selected the biogas upgrading equipment based on DMT's experience, 24/7 customer support, and technology performance. Currently, membrane separation technology dominates the US RNG market due to its low carbon footprint, low operational costs and operational ease.

"The highest priority for a biogas upgrading system is uptime," said Robert Lems, general manager at DMT Clear Gas Solutions. "Membrane separation technology yields high methane recovery and offers better system performance overall. We designed a system that's easy to operate, easy to maintain and has over 98% uptime, which is unique to the industry."

Hawai'i Gas supplies gas energy to nearly every major market segment in its state: residents, food service, military, hospitality, health care, education, government, agriculture and more. The company's vision is to improve Hawai'i's energy landscape by developing innovative, renewable energy projects to reduce the state's GHG emissions and to promote energy efficiency. Additionally, this project is a critical piece to Hawai'i's resiliency plan for surviving natural disasters. The RNG is delivered safely and reliably through Hawai'i Gas' 1,100-mile underground utility pipeline, meaning that when winds are high and the

power goes out, gas users can still cook and access hot water for sanitation.

"Ensuring that all families have access to affordable, reliable and clean energy are important goals," said Alicia Moy, president and CEO of Hawai'i Gas. "Our RNG project is an important step toward achieving these goals, while at the same time, working towards meeting Hawai'i's vision for carbon neutrality by 2045."

During the American Biogas Council's (ABC) 19th annual Biocycle REFOR19, the project won the 2019 Biogas Project of the Year award for the deployment of DMT's advanced gas cleaning technology on municipal biogas to reduce the carbon footprint of the Honouliuli natural gas system.

"This project was selected because it's at the leading edge of a wave that will sweep the nation as more and more gas utilities purchase RNG made from biogas," said Patrick Serfass, executive director of the ABC. "This project, and others like it, promote the recycling of organic material that would otherwise

be considered waste into renewable energy. They help to protect our environment, reduce our use of fossil fuels and create new jobs."

Since Hawai'i has no naturally occurring source of natural gas like those found on mainland US, this RNG project diversifies the state's local energy supply using existing gas pipeline infrastructure, enhances their energy security and provides an additional revenue-stream. Because the first-of-its-kind RNG facility proved to be such a success, both the state and Hawai'i Gas are looking to the future and focusing on further developing more biogas upgrading projects.

"It has been a privilege working with Hawai'i Gas on this ground-breaking project," added Lems. "They have proven to be a vital gas company for its community and state, and DMT looks forward to working with them again in the future." ●

For more information:

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Robert Lems, general manager of DMT Clear Gas Solutions (left) and Richard DeGarmo, director of renewable energy and capital projects at Hawai'i Gas (right)