CASE STORY

THE CUSTOMER
Mayekawa, Brazil.

THE CHALLENGE
Produce biomethane from raw gas, which is often contaminated with H2S, volatile organic compounds, and moisture, from a landfill in Espirito Santo, Brazil.

THE SOLUTION
A biogas pre-treatment system that uses Mayekawa Booster compressor units, and SWEP heat exchangers for post-compression cooling, to ensure efficiency in the biogas upgrading process.

THE HEAT EXCHANGERS
Two SWEP All-Stainless B222 exchangers were used to cool the biogas and biomethane following the compression process.

THE RESULTS
A high-performance compression unit capable of producing a large volume of biomethane with a high degree of purity.

Mayekawa and SWEP – biogas pre-treatment system ensures efficiency

SWEP
A DOVER COMPANY

The Brazilian energy matrix
Biogas and biomethane are strategic assets for the Brazilian energy matrix. A 2024 survey verified that 1,587 biogas plants were operation, an 18% increase over the previous year. However, not all of the plants have the technology necessary to purify biogas into biomethane. The same survey found that 79 plants were capable of purification, with an additional 25 in the implementation process.

The purification of biogas into biomethane generates two primary streams: Biomethane, which is composed largely of CH_4, and lean gas, also called "off gas," which is primarily composed of CO_2. First, the biogas is compressed so that the purification process can be implemented, separating CH_4 from CO_2 and other contaminants that may be present in smaller quantities. Following purification, the biomethane is compressed for storage and transportation.

The Role of SWEP BPHEs
Two SWEP All-Stainless B222 exchangers were used to cool the biogas and biomethane following the compression process. SWEP All-Stainless technology guarantees good thermal exchange efficiency, strength, durability, and a compact design. L plates were used to reduce pressure drop in the system.

Why choose SWEP?
Compared with conventional heat exchangers, SWEP BPHES feature increased energy efficiency and better use of structural material, making them a more sustainable solution in suitable applications, including biogas pretreatment systems. With a shared mindset of developing efficient, sustainable solutions, SWEP and Mayekawa were the perfect match for this project.

SWEP All-Stainless B222

More about Mayekawa
Mayekawa is a Japanese multinational with nearly 100 years of expertise in the industrial refrigeration and gas compression sectors. Since beginning its operations in Brazil in 1968, the company has expanded globally and is now present on every continent, with 15 branches across Brazil to ensure fast and high-quality service. Driven by a commitment to safety, quality, and product preservation, Mayekawa delivers efficient and reliable technological solutions to its customers. Constantly pursuing innovation, the company focuses on energy efficiency and the promotion of sustainable development.

Learn more about Mayekawa: www.mayekawa.com.br