

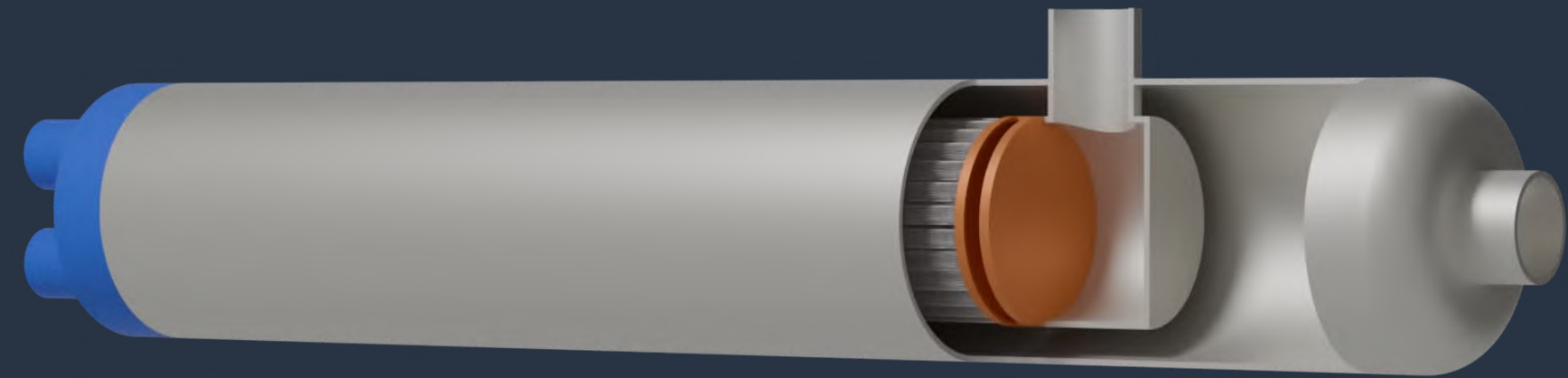


Kaigen Technology

Bring Nanotechnology to save the environment and create new byproducts

"Forging the Future of Molecular Methane Removal and Bioconversion "

Kaigen integrates molecular nanomembrane with methanotrophic bioreactors designed to produce by products and energy production that will supply autonomous trucking, and edge computing to revolutionize logistics and transportation.



Kaigen Vertically Integrated System

Methane Capture and bioconversion



Methane Capture and Bioconversion

Kaigen employs advanced **nanotechnology** and **methanotrophic bioconversion systems** to efficiently capture methane emissions from various sources such as landfills, agricultural sites, and industrial facilities. Through our proprietary bioreactor systems, the captured methane is upgraded and transformed into renewable **biogas**, reducing harmful greenhouse gas emissions and converting waste into energy.

Methanotrophy: Leveraging Natural Processes

At the heart of Kaigen's technology is the use of methanotrophic bacteria, which are highly specialized microorganisms capable of consuming methane as their primary carbon and energy source. These bacteria are genetically engineered to maximize the breakdown of methane into renewable resources, offering a sustainable solution for reducing methane emissions. This natural, efficient process plays a key role in helping industries meet their carbon reduction goals while generating value from methane waste.

Kaigen Vertically Integrated System

Methane Capture and bioconversion



High Efficiency and Low Methane Loss

Our cutting-edge bioreactors achieve **70-80% efficiency**, significantly reducing methane losses to less than **5%** during the upgrading process. This level of efficiency surpasses the industry average, ensuring that most captured methane is converted into usable energy. The methane captured is fed into our **bioconversion system**, utilizing genetically modified methanotrophic bacteria that break down methane into valuable by-products, including **renewable natural gas (RNG)** and other biochemicals.

Innovative Bioconversion Technology

The Kaigen bioreactors are designed to operate with maximum reliability, using an optimized environment for methanotrophic activity. This enables the conversion of methane into biogas and other by-products that can be utilized in both energy generation and chemical production. By integrating this system with real-time monitoring and V2X infrastructure, Kaigen ensures that methane capture is both efficient and scalable, providing a highly sustainable solution for the logistics and energy sectors.

Kaigen Vertically Integrated System

Methane Capture and bioconversion



Transforming Emissions into Value

Kaigen's vertically integrated system not only reduces methane emissions but also creates new revenue streams through the production of biogas and other valuable by-products. By turning methane into a resource, Kaigen offers a comprehensive solution for companies seeking to **decarbonize their operations** while contributing to the **circular economy**.

Leading Vertically Integrated Biomethane Energy and EV Charging Company

"Naturally Occurring Biogas" – Long Life, Stable and Predictable Resource with Innovative Technology to Create Low Carbon Intensity Energy for EV Charging and Edge Computing

KAIGEN BIOPLANT



Landfill



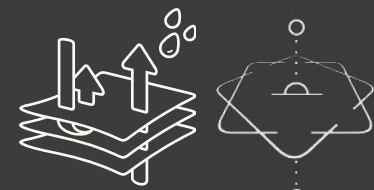
Organic Waste



Livestock & Wastewater



Oil & Gas Emission



CO₂ - CH₄

Separation Nanomembrane



IMBR **Methanotropic**

Bioreactor

Capture & Conversion:

- Nano-Bio capture systems
- Proprietary nanotechnology and membrane enhance methanotropic bioconversion



Bio-Remediation



BioDryer - Quality



Onsite Storage



Compression

VIRTUAL PIPELINE

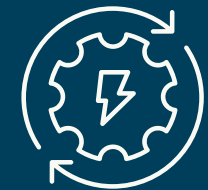


Biogas

Virtual Pipeline



UluKai



Onsite Biogas RNG Supply with Off-Grid Prime Biogas Generators for Clean Power Generation for V2X and EV Vehicles

Spark Station



Spark EV Superchargers

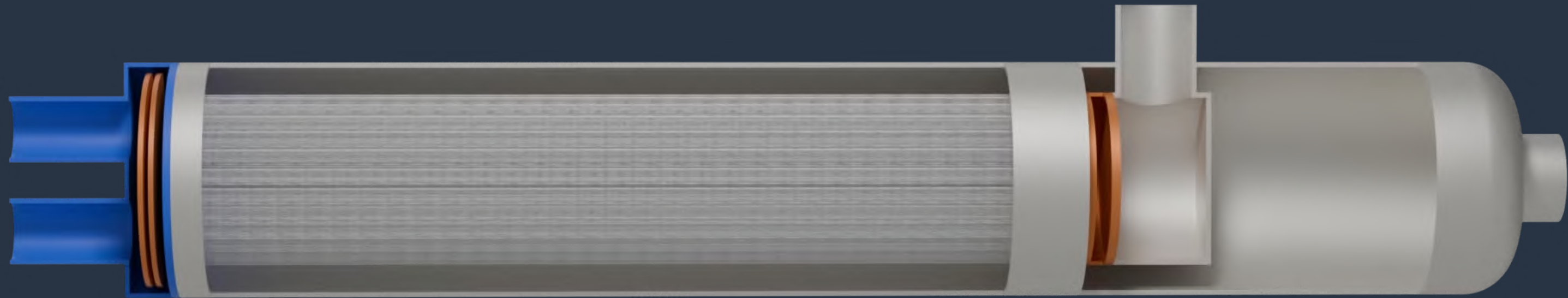


Spark RNG Dispensers



Spark Edge V2X Data Center

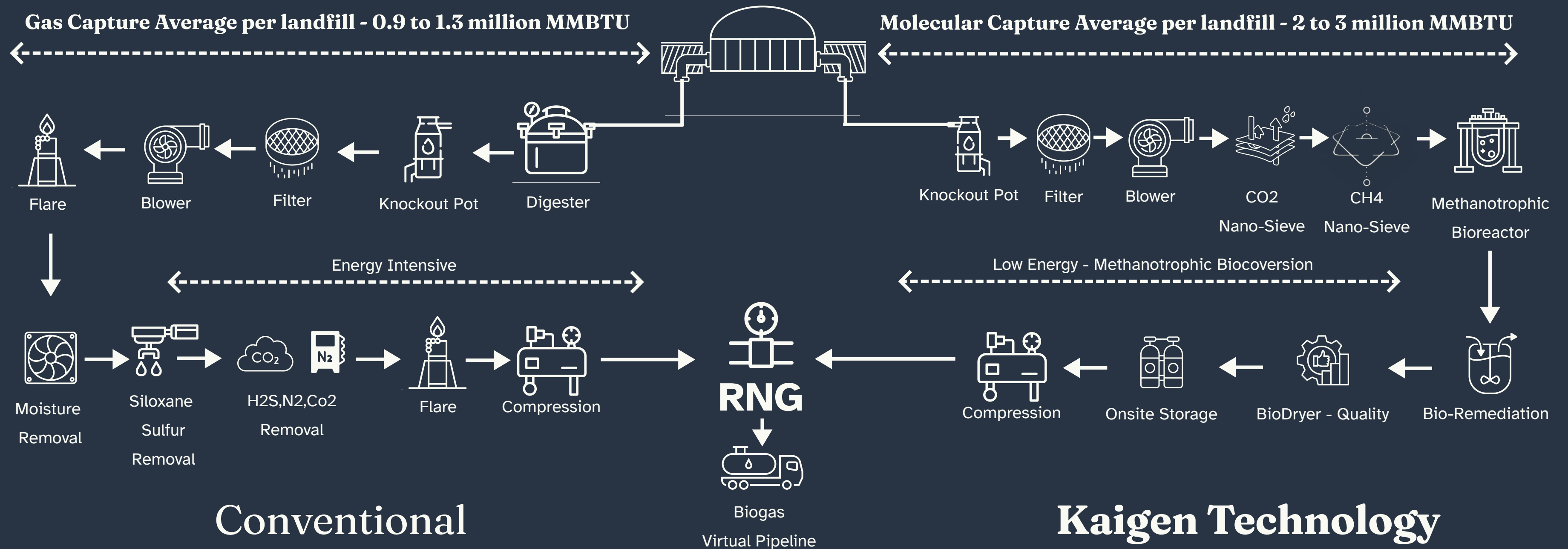
Kaigen's Vertically Integrated System



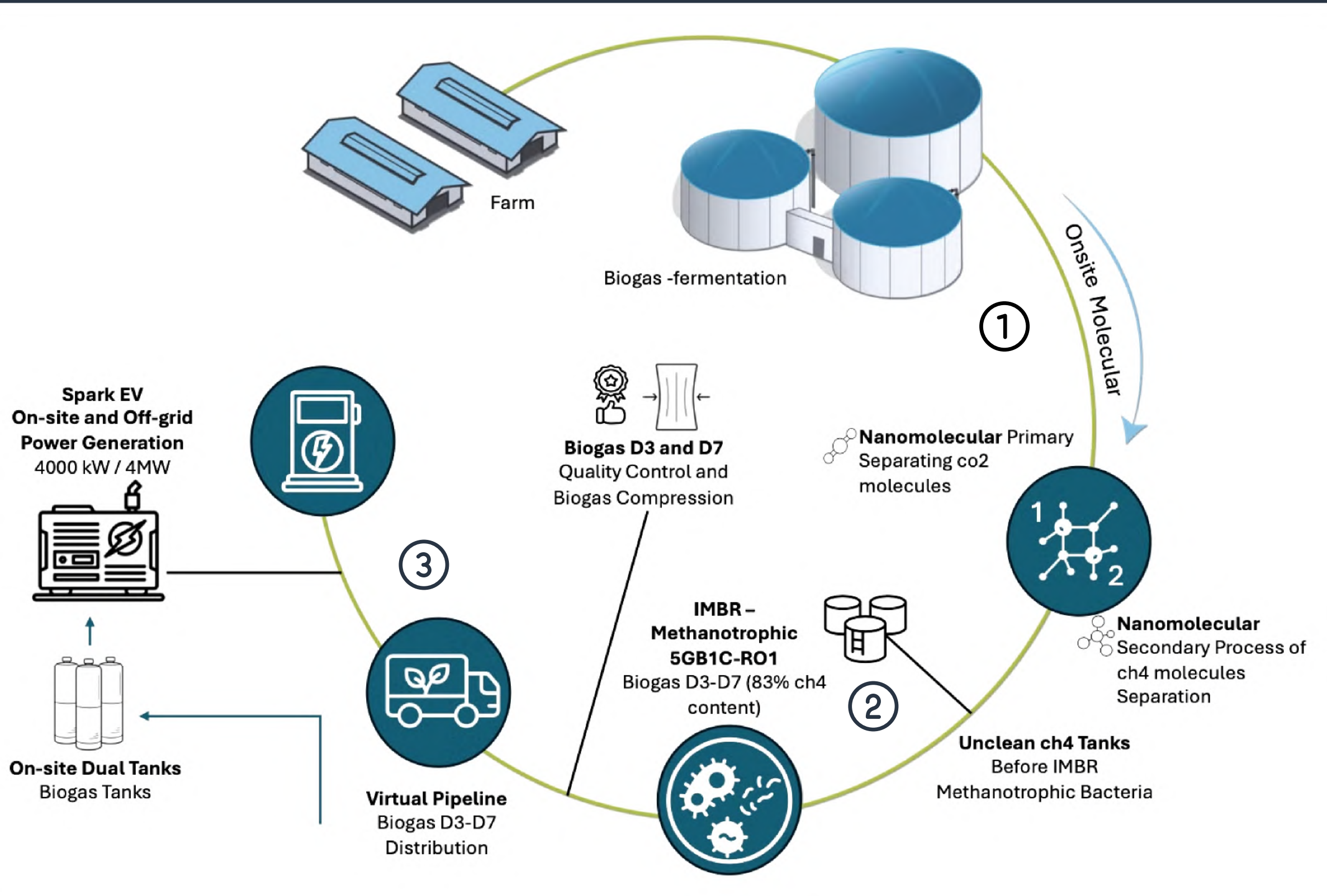
Molecular Methane Capture with Methanotrophic Biocoverison

- **Advanced Methane Capture and Bioconversion Technology**
 - **Proprietary Technology:** Uses cutting-edge molecular bioconversion to efficiently capture and separate methane from landfill emissions.
 - **Biogas Conversion:** Methanotrophic bioreactors convert captured methane into renewable natural gas (RNG), which powers off-grid biogas generators for sustainable energy.

Conventional Biomethane Energy Vs Kaigen Nano-methanotrophic



Advanced Methane Capture for Sustainable Off-Grid Power



- ① Methane emissions are processed using nanomolecular technology to separate CO₂ and CH₄ in two stages: CO₂ removal and 94% efficient CH₄ extraction.
- ② The purified methane is then stored and further optimized through advanced Methanotropic IMBR technology that use a new genetic methanotropic strain named 5GB1C-RO1 and Bioremediation, reaching 85% CH₄ concentration.
- ③ This high-quality biogas is delivered through a virtual pipeline to Spark EV stations, ensuring a reliable supply of clean, off-grid power for EV chargers and edge computing centers, driving sustainable energy solutions.

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