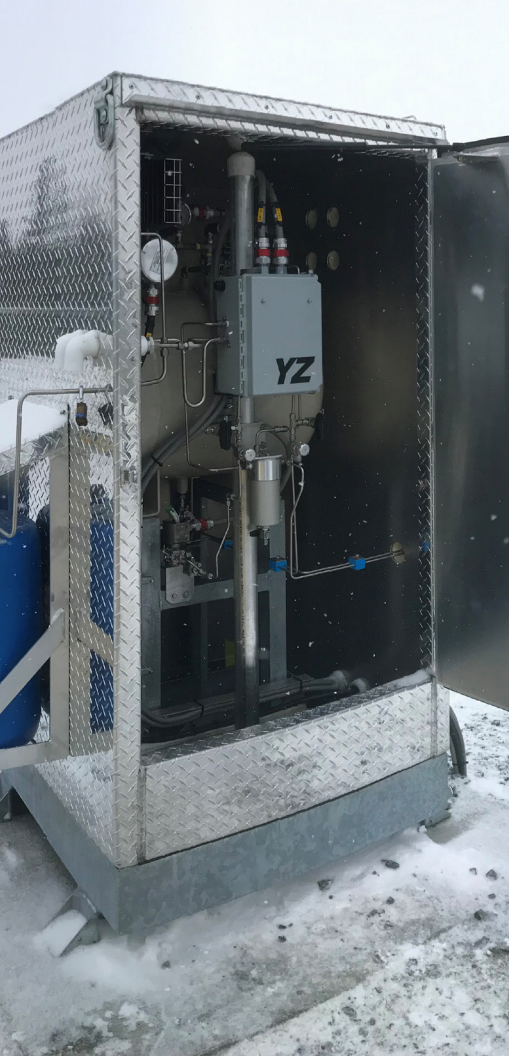


Renewable Natural Gas



Midland Resource Recovery (MRR) is a leading provider of services and products relating to renewable natural gas (RNG).

Basic Information about RNG

The [Environmental Protection Agency \(EPA\)](#) defines renewable natural gas (RNG) as biomethane or [biogas](#) that has been upgraded for use in place of fossil natural gas. The biogas used to produce RNG comes from a variety of sources, including municipal solid waste landfills, digesters at water resource recovery facilities (wastewater treatment plants), livestock farms, food production facilities and organic waste management operations.

As a substitute for natural gas, RNG has many end uses:

- in thermal applications,
- to generate electricity,
- for vehicle fuel,
- as a bio-product feedstock,
- injected in the natural gas pipeline.

Raw biogas has a methane content between 45 and 65 percent, depending on the source of the feedstock, and must go through a series of steps to be converted into RNG. Treatment includes removing moisture, carbon dioxide (CO₂) and trace level contaminants (including siloxanes, volatile organic compounds, or VOCs, and hydrogen sulfide), as well as reducing the nitrogen and oxygen content. Once treated the gas has a methane content of 90 percent or greater. Typically, RNG injected into a natural gas pipeline has a methane content between 96 and 98 percent.

Benefits

Use of RNG can provide benefits in terms of fuel security, economic revenues or savings, local air quality and greenhouse gas emission reductions.

Fuel diversity benefits

Use of RNG increases and diversifies domestic energy production. RNG can be used as a baseload fuel source with high availability rates. It leverages existing infrastructure such as pipelines and heavy-duty vehicles. Biogas feedstocks for RNG are generated continuously from a variety of sources.

Economic benefits

The development of RNG projects can benefit the local economy through the construction of RNG processing and fueling station infrastructure and sale of natural gas-powered vehicles.

Local air quality benefits

Replacing traditional diesel or gasoline with RNG can significantly reduce emissions of nitrogen oxides and particulate matter, resulting in local air quality benefits. RNG contains zero to very low levels of constituents, such as ethane, propane, butane, pentane or other trace hydrocarbons.

Greenhouse gas emission reductions

RNG projects capture and recover methane produced at a landfill or anaerobic digestion (AD) facility. Methane has a global warming potential more than 25 times greater than CO₂ and a relatively short (12-year) atmospheric life, so reducing these emissions can achieve near-term beneficial impacts in mitigating global climate change. For facilities that are not already required to mitigate such emissions, an RNG project can reduce methane emissions significantly.

Midland Resource Recovery and RNG

MRR is the leading odorization expert. Our team designs odorization systems for reliability and consistency. MRR has experience in a variety of odorization systems and can produce exactly what you need for your RNG project. We have the most expertise in the industry and can keep your company in compliance with all regulations, leading to a safe and incident free site.

MRR offers temporary rental odorizers, odorant tank rentals and remote communication via wireless modem. Our team also offers turnkey installation of your odorizer.

MRR can provide the odorant you need to odorize your RNG. Our team offers transfer services so that your company can rest assured that your tanks are filled safely and incident free.

Visit us on the web: www.mrrus.com



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