EQUINOX® Engineering Ltd

RENEWABLE NATURAL GAS (RNG)

Renewable Natural Gas (RNG)

EQUINOX Engineering Ltd

Equinox Engineering Ltd. is a world class provider of EPCM services to the global oil and gas marketplace.

Equinox has industry leading expertise in natural gas processing, with a specialization in carbon capture and renewable natural gas.

Founded in 1997, Equinox has successfully executed over 7,000 significant projects around the world.

Equinox has a worldwide presence with offices in Calgary (Canada), Houston (USA), Pittsburgh (USA), Brisbane (Australia) and Pune (India) with projects executed in fourteen countries and three continents.

We provide complete EPCM services for facilities and pipeline design and installation. This includes Conceptual and Front End Engineering Design (FEED), Detailed Engineering Design, Procurement, Construction Management through to Start-up and Commissioning.

Equinox RNG Facilities

Equinox Engineering has successfully executed numerous Renewable Natural Gas (RNG) projects, utilizing the latest technology and innovative design strategies. Drawing on the expertise of our highly skilled and experienced professionals, we are able to design and implement RNG projects that not only meet our clients' needs but also exceed their expectations.

Landfill Gas (LFG) Expertise

Equinox Engineering has a wealth of technical expertise in Landfill Gas (LFG) management. Our team of highly skilled engineers has a deep understanding of the processes involved in LFG capture, treatment, and utilization.

Our portfolio of projects in LFG management, include the design and implementing LFG collection and control systems, LFG-to-energy systems, and LFG treatment and processing facilities.

We leverage cutting-edge technology and innovative design strategies to develop customized solutions that meet the specific needs of our clients. Our technical expertise, attention to detail, and commitment to sustainability enable us to deliver high-quality LFG management solutions that are reliable, efficient, and environmentally friendly.

Anaerobic Digester Expertise

Equinox Engineering is a leader in Anaerobic Digester Gas technology for Renewable Natural Gas (RNG) production. Our expertise spans across anaerobic digestion, gas cleanup and upgrading systems, with a focus on advanced technologies like high-efficiency biogas scrubbers, pressure swing adsorption (PSA) systems, and membrane separation technologies.

We implement these technologies to treat and convert biogas into RNG of the highest quality, suitable for pipeline injection or direct use.

Our solutions optimize the capture of methane, significantly reduce greenhouse gas emissions, and maximize the energy output.

Engineering Services

Equinox Engineering offers a comprehensive suite of engineering services tailored to meet your renewable natural gas (RNG) requirements. Our expertise is designed to turn your challenges into opportunities, fostering sustainability and efficiency in every project.

- Pre-FEED / FEED / Detailed Design
- Process Simulations & Design
- Facility Layout
- 3D Modeling
- Construction Drawings
- Electrical Design
- Mechanical Equipment Specification
- Civil Design
- Instrumentation, Controls & Automation
- Procurement & Expediting
- Cost Estimating & Scheduling
- Regulatory, Permitting & Environmental
- Construction Management
- Commissioning & Start-Up

RNG Process Flow

Renewable Natural Gas (RNG), also known as biomethane, is a high-value, low-carbon energy source produced from organic waste materials. The process of creating RNG involves several stages:

Feedstock Collection

The RNG process begins with the collection of organic waste, which can include agricultural waste, food waste, sewage, and landfill gas.

Anaerobic Digestion

For agricultural, food and sewage sources the collected waste is sent to anaerobic digesters, either above ground tank style of below ground lagoon style, where microorganisms are introduced. The microorganisms breakdown the organic materials producing biogas.

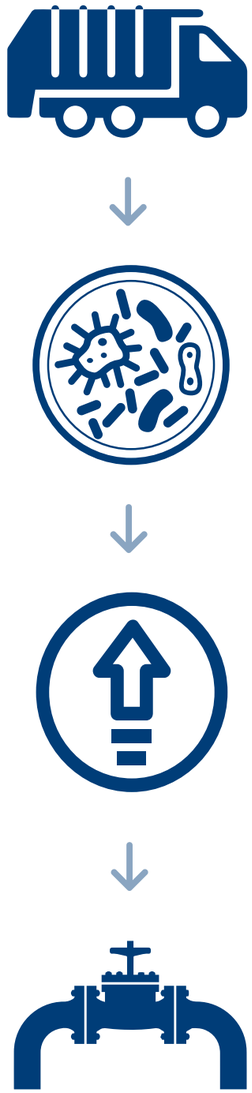
With landfill gas the biogas is produced within the landfill and collected via large, low pressure piping infrastructure.

Gas Cleanup & Upgrading

The biogas produced is low pressure and primarily composed of methane and other impurities including: carbon dioxide, hydrogen sulfide, water vapor, volatile organic compounds. It is then cleaned, processed and upgraded to remove the impurities leaving a highly concentrated, nearly pure methane stream (natural gas).

Gas Injection

Once the biogas is upgraded to RNG it can be compressed and injected into high quality sales gas pipeline systems or used directly in applications like power generation that require clean natural gas.



Project Experience - Lower 48

Landfill Gas Facility - Standard Design
Lower 48 (various states)
3,200 to 9,600 SCFM

Equinox is providing the balance of plant design, permitting, environmental and regulatory for 20 templated LFG facilities across 8 different states. The processing includes removal of H_2S, CO_2, N_2, H_2O and O_2 for a sales quality, high pressure natural gas stream.

Services include: Process Engineering, Mechanical Engineering, Civil Engineering, Structural Design, Electrical Engineering, Controls & Instrumentation Design, Facility Layout and Design, Permitting, Environmental.

Technologies considered: Adsorption for H_2S removal, Membranes for CO_2 and N_2 removal, mole sieve adsorption for H_2O removal, Catalytic Oxidation for O_2 removal, and compression.

Landfill Gas Facility - Custom Design
Illinois
3,200 SCFM

Equinox is providing the balance of plant design, permitting, environmental and regulatory for an LFG Facility that a standard template layout requires re-designing due to spatial constraints. The processing includes removal of H_2S, CO_2, N_2, H_2O and O_2 for a sales quality, high pressure natural gas stream.

Services include: Process Engineering, Mechanical Engineering, Civil Engineering, Structural Design, Electrical Engineering, Controls & Instrumentation Design, Facility Layout and Design, Permitting, Environmental.

Technologies considered: Adsorption for H_2S removal, Membranes for CO_2 and N_2 removal, mole sieve adsorption for H_2O removal, Catalytic Oxidation for O_2 removal, and compression.

RNG Pipelines
Lower 48 (various states)

Equinox is providing complete pipeline design construction packages including hydraulic calculations, material selection and construction drawing packages. The RNG pipelines are designed to transport processed landfill gas to sales receipt points at high pressure.

Services include: Process Engineering, Mechanical Engineering, Civil Engineering, Electrical Engineering, Control & Instrumentation Design.

Materials Considered: Carbon steel, Stainless Steel, High Density Poly-ethylene (HDPE), Fiberspar.

Dairy Digester - Owners Engineering
California
3,200 SCFM

Equinox is providing complete Construction Management and Commissioning Coordination for a comprehensive manure handling system and off gas treatment equipment.

Services include: Construction Coordination, Owners Engineer Services, Commissioning Coordination.

Technologies considered: Underground Digester Beds, Adsorption for H_2S removal, Membranes for CO_2 and N_2 removal, mole sieve adsorption for H_2O removal, Catalytic Oxidation for O_2 removal, and compression.

Equinox delivers focused and experienced

Premium Teams

customized with the best

Technical Expertise

to align with

Client Culture

to ensure repeatable and

Successful Projects

EQUINOX Engineering

Canada | USA | Australia | India

www.equinox-eng.com