CEM ENGINEERING

Building A More Functional World

BIOGAS/ RNG

Make your energy transition project the most successful it can be.

Client-Focused Energy Transition Project Delivery Firm

We know the world is changing, and pushes toward clean and renewable energy sources have left many companies working on custom clean energy capital projects. The problem is, many engineering firms are unprepared to tackle these projects, leaving deadlines missed, investors frustrated, and capital wasted on engineering that was never going to work.

We believe every clean energy system should meet its full potential and we've spent the last 20 years specializing in molecule-based energy transition, completing over 50 projects and commissioning over 415 megawatts of energy. With foundational experience in cogeneration and energy management projects, CEM has become a leader in Canada's energy transition.

Here's how we do it:

1. **Discovery** – We meet with you to understand the project and draft a comprehensive proposal to align on a plan for the project.

2. **Development** – Our team works through the initial steps of the project design to get an accurate expectation of scope and cost.

3. **Implementation** – We work with you through procurement, design, construction and commissioning to get the project across the finish line.

4. **Operation** – Your project is complete and operating to your expectations.

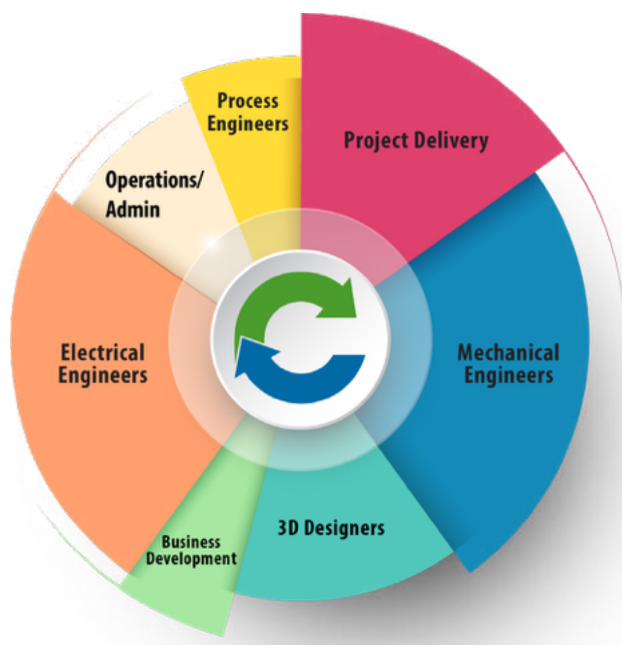
Your Partner

We understand that the success of a project is heavily influenced by its initial stages. Being engaged early on as your partner, we are committed to supporting you throughout the entire project journey.

This close collaboration ensures that we are aligned with your vision, enabling us to deliver a successful clean energy project.

Our biogas/RNG services range from feasibility studies through to detailed design, construction and full turnkey solutions.

Our team has experience in conceptual design, feedstock testing, carbon intensity (CI) scores, equipment procurement, construction and commissioning.



Featured Biogas Projects

Tampa Electric/Peoples Gas AD to RNG, Florida

As one of the largest dairy biogas to RNG projects in Florida, this project captures waste from approximately 6,500 cows from a large dairy farm and will produce 650 scfm of biogas for conversion to pipeline quality RNG.

Built by Tampa Electric/Peoples Gas, the project utilizes high-efficiency membrane separation technology for recovering more than 99.6% methane from biogas including upstream biogas conditioning and hydrogen sulfide removal system. This project injects pipeline quality RNG into the Florida Gas Transmission (FGT) system very close to the project site without needing virtual pipeline transportation infrastructure.

CEM acted as the EPC contractor and led all aspects of detailed engineering, procurement of all required upgrading & ancillary equipment, and on-site construction and commissioning of the project.

Terreva Renewables - Delta LFG to RNG, BC

This project features a three-bed PSA, membranes and gas compression. Formerly a landfill gas CHP project, this project now has the capacity to process up to 4,500 scfm of raw landfill gas from the City of Vancouver landfill to Village Farms in Delta, BC and will produce RNG for injection into Fortis BC's local gas infrastructure.quality RNG into the Florida Gas Transmission (FGT) system very close to the project site without needing virtual pipeline transportation infrastructure.

CEM (as a joint venture member of the EPC contracting team for this project with ThreeOSix Construction) Was the Engineer of Record and completed all detailed engineering (mechanical/piping, electrical, structural, I&C), provided procurement packages & procurement support, and is currently supporting on-site construction & commissioning.

Waste Management - 2 x LFG to RNG Projects

These 12,000 scfm and 8,000 scfm projects feature scavenger vessels with carbon media for H_2S removal; absorption vessels with selexol; and an amine plant for CO_2 removal. The projects will treat landfill gas (LFG) and anaerobic digester gas (ADG) combined. The methane-rich LFG and ADG will be compressed and cleaned of unwanted contaminants before being delivered as pipeline-quality renewable natural gas (RNG) into the utility pipeline for use.

CEM is currently completing detailed engineering for all aspects of the project including structural, mechanical, electrical, and I&C. The projects are scheduled to be substantially complete by 2024.

Lethbridge Biogas LP, Lethbridge, Alberta

This project consists of a two-bay receiving/unloading building, two 1,150 m3 pre-storage tanks, three 3,900 m3 anaerobic digesters, one 5,700 m3 post-storage tank, two stage air-treatment system with a wet scrubber & 2 biofiltration units, emergency biogas flare and two 1.4 MWe biogas-fueled cogeneration units generating electricity and power from biogas generated from industrial and agricultural waste.

CEM designed the electrical interconnect and provided complete project management services.

Chatham-Kent Wastewater Treatment Centre, Chatham, Ontario

This project features a 250 kW ICE based cogeneration system in acoustic weather-proof enclosure, together with storage of digester gas, such that delivery pressure of fuel to cogen is steady and predictable.

Commissioned in 2013, CEM completed all schematic design, detailed design and provided contract administration services on behalf of the owner during construction and commissioning.

Bayview Flowers, Jordan Station, Ontario

Project consisted of two Anaerobic Digesters @ 1,200m3 each, 250 kW ICE cogen; 15 m3 dry feeder. Input materials included Dairy Manure; Corn Silage; Dry Grain-Based Animal Food; Grain Corn; Glycerine; Potato Culls; Greenhouse Clippings.

Commissioned in 2009, CEM was involved in this project from initial conception through to detailed engineering and commissioning. CEM was responsible for hot water tie-in to existing greenhouse loads and hot water loop for digester heating; biogas piping, biogas boiler fuel train, and biogas blower to engine genset and greenhouse boiler system. CEM was also responsible for obtaining approval from TSSA for biogas fuel system and piping; design of biogas clean up system, to ensure biogas meets quality requirements of engine.

Future Fuel, Two Hills, Alberta, Canada

This project consisted of transforming an idle biogas facility and upgrading it to an RNG Plant which will inject into a nearby pipeline. Original plant consisted of three Anaerobic Digesters which produced 450 GJ/day. The goal was to get the new RNG plant to produce 650 GJ/day. This required additional feedstock handling system; repair and refurbish existing digester; adding a new digester and upgrade the biogas to RNG.

CEM completed retrofit and re-engineering of the existing equipment; overall facility layouts and upgrades and design and engineering of the greenfield RNG upgrading.

Liberty Utilities, Various Projects, United States

These biogas to RNG projects ranged from 90 scfm to 212 scfm, including membrane biogas upgrading technology, CNG compression technology and CSTR anaerobic digesters.

CEM acted as the Owner's Engineer to support the acquisition of these projects. Owner's Engineer support extended to support to construction and commissioning of the facilities.

Your projects deserve to meet their potential and it's time to start working with the team who has proven they can guide you to the future of energy.

Connect with us to see how we can help you in any of the following areas:

Cogeneration	Anaerobic Digesters	Electrolysis	Carbon Capture	Energy Management
Power Generation	Landfill Gas Upgrading	Steam Methane Reforming	Utilization	Energy Master Planning
Boilers	Biogas Upgrading	Hydrogen Combustion	Sequestration	Heat Pumps
District Energy	RNG Compression	Fuel Unloading Stations		Energy/ Carbon Audits
Electrical Substations	Virtual Pipelines			
Steam Plant Upgrades				

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