

CEM ENGINEERING

Building A More Functional World



HYDROGEN

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:

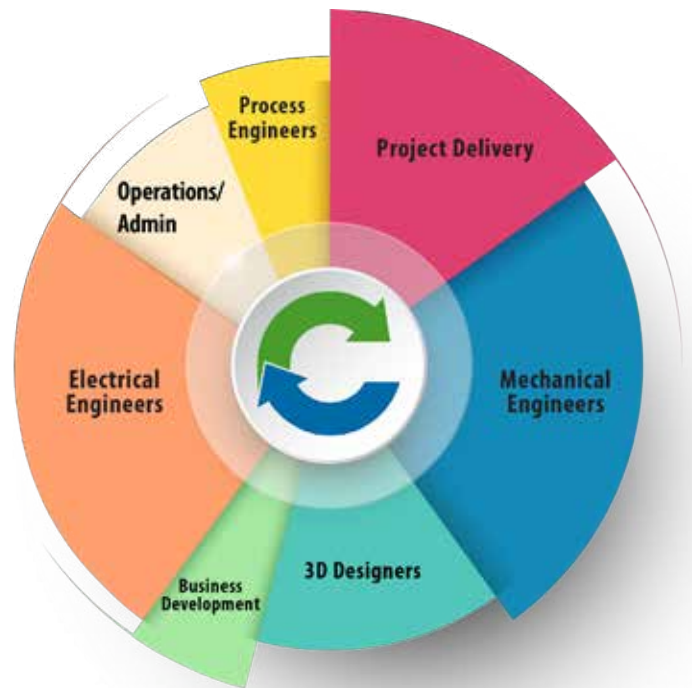
1. **Discovery** – We meet with you to understand the project and draft a comprehensive proposal to align on a plan for the project.
2. **Development** – Our team works through the initial steps of the project design to get an accurate expectation of scope and cost.
3. **Implementation** – We work with 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 services cover the entire hydrogen project lifecycle, from feasibility studies through to detailed design, construction and full turnkey solutions.

Our team has unique hydrogen experience with everything from generation of electrolytic hydrogen to CHP 100% fueled by hydrogen.



Featured Hydrogen Projects



Niagara Hydrogen Centre, Atura Power, Niagara Falls, ON

This 20 MW project at the Niagara Hydrogen Centre (NHC) is designed to provide ancillary benefits to support grid stability, while efficiently producing Green Hydrogen. With planned completion date in 2024, this project will feature a Cummins proton-exchange-membrane (PEM) electrolyzer system with capacity to produce up to approximately 2,000 tonnes of hydrogen per year. NHC will be the largest green hydrogen production facility in Ontario, establishing a basis to develop the Hydrogen industry in Ontario by providing industrial consumers with low-carbon hydrogen for immediate consumption.

CEM (in Joint Venture with Sacré-Davey of North Vancouver, BC), is the Owner's Engineer and Engineer of Record for Atura Power (a subsidiary of Ontario Power Generation). Responsibilities include complete detailed design of the Hydrogen production, compression and loading systems, complete detailed design of the 230 kV electrical interconnection and related systems, guide Atura in the technical selection of key project equipment and technology, assist Atura in obtaining approvals, permits and licenses for the project, and provide oversight and support for the General Contractor.



Markham Technology Operations Centre, Enbridge Gas

A first-of-its kind in North America, this Combined Heat and Power (CHP) system burns hydrogen in a 2G Energy engine. The hydrogen CHP provides heat and power to Enbridge's 120,000 sq. ft. facility, which is home to approximately 197 employees. The 100 kW CHP system currently operates with a minimum blend of 25% hydrogen to 75% natural gas, with the aim to run on 100% hydrogen within a year.

CEM provided full turnkey services and together with 2G Energy, this project was commissioned in 2024.



Ajax Distribution Centre, Amazon

Commissioned in 2021, this Hydrogen fuel distribution system economically supplies over 250 lift trucks with Hydrogen fuel for fuel cell drives instead of traditional battery drive systems. The engineered system utilizes cryogenic hydrogen for bulk storage with vaporization for intermediate high and low pressure gas storage, control, distribution tubing and fuel dispenser stations.

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:



HYDROGEN

Cogeneration
Power Generation
Boilers
District Energy
Electrical Substations
Steam Plant Upgrades



BIOGAS / RNG

Anaerobic Digesters
Landfill Gas Upgrading
Biogas Upgrading
RNG Compression
Virtual Pipelines



POWER & UTILITIES

Electrolysis
Steam Methane Reforming
Hydrogen Combustion
Fuel Unloading Stations



CARBON CAPTURE

Carbon Capture
Utilization
Sequestration



CARBON REDUCTION

Energy Management
Energy Master Planning
Heat Pumps
Energy/ Carbon Audits

Subscribe to our podcast to hear stories about transformative energy transition projects across various industries. Visit www.CEMeng.ca/podcast to know more

