



HYDROGEN

Sacré-Davey Expertise

Hydrogen

Sacré-Davey Engineering is a 35-year old engineering and project delivery company dedicated to helping provide sustainable energy solutions using hydrogen and other low carbon related technologies across North America. We have delivered a complete suite of leading-edge hydrogen purification and distribution infrastructure solutions, technology scale-ups, and end use applications.

Using our network of subject matter experts combined with our full service, multidisciplinary engineering, we provide clients with all the services required for development, design and implementation of their projects.

Services

Hydrogen

Generation and Storage

- Electrolyzer hydrogen production (green)
- SMR with carbon capture (blue)
- SMR (grey)
- Waste hydrogen recovery
- Purification, pressure swing adsorption
- Waste digestion and biogas upgrading
- Gasification and syngas production
- Liquefaction technologies

Hydrogen Movement

- Compression and high-pressure bullets
- Liquid hydrogen trailers
- Pure hydrogen pipelines
- Virtual pipelines
- Pipeline blending and co-distribution
- Chemical hydrides
- Formic acid and ammonia manufacture

Hydrogen End Users

- Storage and fueling infrastructure
- Hydrogen-safe room designs
- Fuel cell grid tie-in and net metering

Studies & Services

- Hydrogen technology and equipment integration
- Codes and standards review
- Owner's Engineer / Engineer of Record (EOR)
- Technology development and commercialization
- Education, consulting and adoption strategies
- Testing facility design and permitting
- Government funding applications and reporting
- Reliability, Availability and Maintenance (RAM)
- HAZOP / HAZID / Safety Reviews
- Failure Modes & Effects Analysis (FMEA)
- Risk mitigation
- GHG calculations / carbon accounting

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Key Projects

Hydrogen

Please let us know if you would like to learn more about the Sacré-Davey Engineering project portfolio.

Large Scale Electrolyzer Installation: installation of a world class 88-megawatt electrolyzer plant for the production of green hydrogen and oxygen that will be supplied to Énerkem for a biofuel production facility.

Sacré-Davey is currently providing Hydro-Québec with owners engineering services for the integration as well as the balance of plant design. The water electrolysis plant will produce 11,100 tonnes of green hydrogen annually. Both the hydrogen and the oxygen will be used in the biofuel plant of Énerkem. Commissioning of the green hydrogen plant is scheduled for late 2023.

Integrated Waste Hydrogen Utilization Project (IWHUP) was a sustainable energy initiative focused on demonstrating and promoting industrial by-product hydrogen as a clean fuel. \$20 million of government funding was obtained to demonstrate:

- Hydrogen delivery
- Light duty hydrogen fueling station
- Light duty hydrogen vehicle program coordination
- HCNG transit buses and fueling program coordination
- Fuel cell installation
- Ford hydrogen shuttle bus program coordination
- Subject matter experts for hydrogen code development

Public Use Hydrogen Vehicle Fueling Station: Sacré-Davey Engineering worked with the partnership of Hydrogen Technology & Energy Corporation (HTEC) and Shell Canada to complete the design of the very first hydrogen fueling station in Canada. Located in Vancouver, the facility provides fuel for hydrogen fuel cell electric vehicles. SDE provided structural and electrical engineering as well as code compliance services for the project, which opened to the public in June of 2018.

Fuel Cell Transit Bus Filling Station: Sacré-Davey Engineering performed mechanical, electrical, and structural design, as well as codes and standards support, for a liquid hydrogen fueling station located in Whistler, BC. The station dispensed hydrogen to a fleet of 20 transit buses.



Quality Management – The Organizational Quality Management System (OQM) was designed by engineers specifically for the engineering profession and provides a significant step towards ISO Certification. Sacré-Davey Engineering was one of the first companies to implement this program and be certified in its use. All offices of the company, agnostic of location, adhere to this program in our efforts to maintain the same high-quality standards demanded by our clients.

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Sample Projects

Hydrogen

Client	Project	Description
QuestAir Technologies	Hydrogen liquefaction facility	Recover waste hydrogen from an industrial source, purify, compress, and liquefy
Harnois Énergies	Hydrogen vehicle fueling Station	Hydrogen vehicle fueling station for public use, first in Québec.
Air Liquide Canada	Mobile hydrogen refueller	Stores over 100kg of gaseous hydrogen at 450 bar (6500 psig) and capable of filling vehicles at 350 bar (5000 psig) pressure.
Vancouver Airport	Vancouver Airport hydrogen station	Dispensing of gaseous hydrogen to a fleet of luggage tractors and pickup trucks.
Hydrogen Technology and Energy Corp (HTEC)	Byproduct hydrogen purification and compression	Recovers waste hydrogen from a chloralkali plant, purifies to 99.999% and compresses to 450 bar (6500psi).
Hydrogen Technology and Energy Corp (HTEC)	High pressure hydrogen fueling station	Vehicle fueling station to run at 700bar. Installation support including code compliance and structural design.
Xtrata Mining	Wind to hydrogen study	Study for a remote mining facility examining the feasibility of using wind turbines to create hydrogen, offsetting diesel generated electricity.
Loop Energy	Hydrogen testing lab design	Design of liquid tank layout, hydrogen interconnecting piping, ventilation, building electrical and structural, electrical hazardous assessments, HAZID, construction inspections and contractor coordination