

# Teralta and Chemtrade produce clean hydrogen for pulp mill in Prince George, Canada

Learn how we produce clean hydrogen from by-product hydrogen to help power the mill with clean energy.





Teralta began working on the Prince George project in 2022. It was the first initiative in the company's international by-product hydrogen strategy involving the development of utility-scale low-carbon hydrogen for industrial operations.

Chemtrade, our hydrogen supply partner, was the perfect use case. The company generates over 640,000 gigajoules of by-product hydrogen annually from its operation in Prince George BC where it produces and sells sodium chlorate for different end users.

The project will provide the mill with up to 500,000 gigajoules of clean hydrogen per year, predicted to reduce the use of natural gas by up to 25%, and eliminating 700,000+ tonnes of CO2 over 20 years.



Up to  
**500,000**  
gigajoules

Clean hydrogen  
consumed to power  
the mill



Up to  
**700,000** ↓  
tonnes

CO2 reduction across  
the life of the project



Up to  
**500,000**  
gigajoules

Annual reduction in  
natural gas



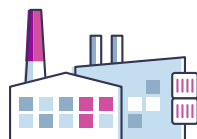
# The challenges

## Project Coordination

These complex projects involve working closely with many different stakeholders including local communities, government and regulatory bodies, industries, and utilities.



**Chemtrade** is the hydrogen supply partner, providing by-product hydrogen produced by its facility in Prince George in the production of sodium chlorate for pulp bleaching.



The pulp mill in **Prince George** would receive the clean hydrogen, piping it into the mill's heating system to displace natural gas consumption and reduce emissions for a cleaner operation.



**AdvanTec** provides turnkey manufacturing and integration of the hydrogen capture and compression systems used by Teralta customers, including at the mill.

Although clean hydrogen initiatives are booming, there were no precedents in place. Much of the work was foundational, laying the groundwork for future initiatives. From financing, satisfying regulatory oversight, reaching consensus on the terms of the deal, and the design and creation of the hydrogen infrastructure—the project, from initial engagement to launch will take more than 2 years.

# Regulatory compliance

An important impetus for the project was a provincial mandate requiring utilities to deliver at least 15% renewable energy by 2030, helping the province achieve its target of a 47% net reduction in emissions.

Originally, the [British Columbia Utilities Commission](#) (BCUC) directed utilities to pay the renewable gas price for hydrogen. However, the cost of hydrogen was much higher. For the hydrogen delivery model to work, hydrogen needed to become a prescribed undertaking within the Greenhouse Gas Reduction (Clean Energy) regulation. This would permit it to be included by BCUC and utilities within the carbon reduction plan.

Teralta successfully advocated for by-product hydrogen to be included in the definition of clean hydrogen within the provincial regulations, providing the company with the perfect opportunity to stand up the Prince George hydrogen initiative.

## The deal

After mapping potential by-product hydrogen sites across North America, Teralta reached out to Chemtrade to investigate the feasibility of capturing hydrogen at its sodium chlorate facility in Prince George, BC, which was producing 12 tonnes of by-product hydrogen each day. Teralta proposed an innovative project model from an investment perspective to repurpose the by-product hydrogen.

Chemtrade had already investigated different options to repurpose by-product hydrogen, none of which presented an acceptable investment model. However, with its commitment to Environmental, Social & Governance (ESG) principles and to Responsible Care®, the company entered into discussions with Teralta.

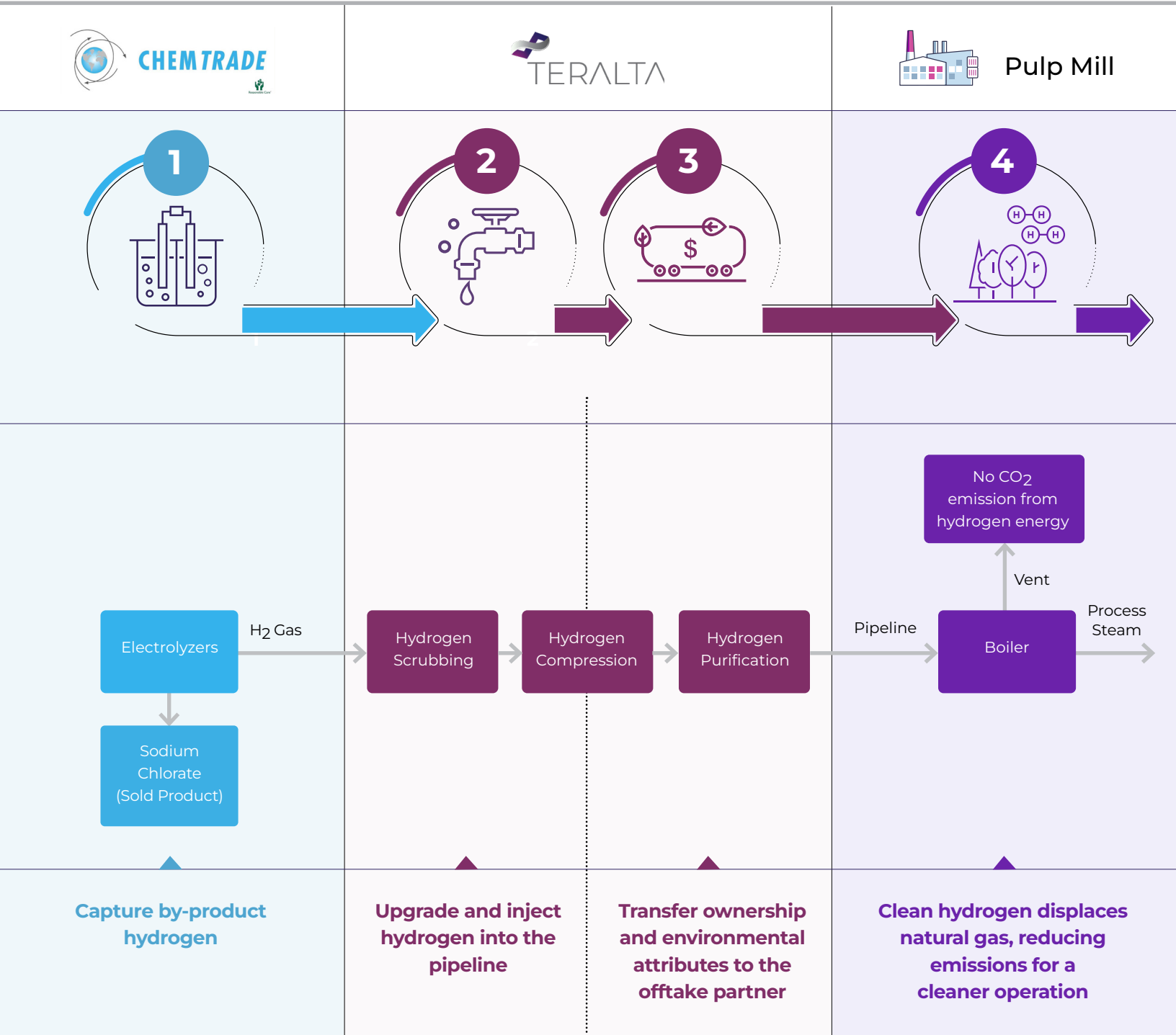
With the Teralta model, hydrogen sources at Chemtrade's site are distributed to the pulp mill. Existing natural gas consumption is displaced, reducing emissions by up to 31,000 T CO<sub>2</sub>e per year for a cleaner operation.

Terms were reached whereby Teralta would collect the vented hydrogen gas, selling it to the utility for distribution back to the mill. Chemtrade receives a portion of the profits from the sale of the gas.

Along with offsetting increasingly expensive energy costs, the deal allows Chemtrade to monetize an existing asset with no investment and no upfront costs.

# The technology

Teralta captures the by-product hydrogen, repurposing it as a clean source of energy to help power the pulp mill.



# The System:

- Innovative Hydrogen Scrubbing and Purification System
- Twin Parallel Hydrogen Compressors
- Total Compression Power: 600 kW
- Dedicated Hydrogen Pipeline: 0.5 km long, 8" Stainless Steel
- Typical Hydrogen Delivery: 60 GJ/hr
- Peak Hydrogen Delivery: 76 GJ/hr
- Upgraded Power Boiler Burners and Management System for Primarily Hydrogen and Wood By-product
- Power Boiler Steam Output: > 140 T/hr
- CAN/BNQ 1784-000/2022 Compliant Installation



*Compressors in the AdvanTec manufacturing facility in Chilliwack, BC*

# The Project



The planning process was critical to ensure the project would deliver the expected results. Teralta worked closely with Chemtrade to validate the scope.

Set-up included the capture of by-product hydrogen from the Chemtrade operation, for distribution to the mill.



# Planning



Teralta undertook significant engineering work to build infrastructure in compliance with the marine security-rated facility. From an operational and technical perspective, safety took precedence over economics, in alignment with Chemtrade best practices.

After reaching an agreement in principle, class 3 investment-grade estimates of all the engineering equipment and construction costs were developed. The Teralta team studied the facility in detail, ensuring clean-up and compression equipment could be installed without disrupting the existing operation which had to remain active throughout the project and beyond.

The plan included a dedicated building to contain the hydrogen recovery system that the by-product hydrogen would flow into, for distribution of the clean hydrogen into the mill's boiler system.

# The Outcome

Hydrogen production will begin immediately once the project launches, providing the mill with a clean source of energy to help power the operation. Hydrogen will represent up to 25% of the gas energy requirements for the facility.

Through hard work and dedication, Teralta will deliver the first profitable hydrogen service model for the pulp and paper industry. Working closely with the local community, government and regulatory bodies, industries, and the utility, Teralta will deliver a successful and profitable outcome for all stakeholders.

The work to stand up hydrogen purification, compression, and delivery projects is extremely specialized. Teralta is one of few companies in the world able to combine a deep understanding of project investment, engineering, and fabrication of the required operational infrastructure to successfully deliver these projects to market. Such unique differentiators ensure Teralta's leadership position within the hydrogen market today, and into the future.



*The project in Prince George is complex but immensely satisfying as an important first step in our journey to a future where hydrogen is readily accessible at cost parity with fossil fuels. With over 2,000 tonnes per day of stranded hydrogen across North America that can be recovered and sold, we're just getting started. Our second by-product hydrogen project is already in the works so stay tuned."*

**Simon Pickup, CEO**

Teralta

Teralta provides simple, clean, utility-scale hydrogen for a variety of commercial use cases, helping businesses reduce energy costs and emissions.

If you're interested in how we can help you succeed with your hydrogen project, [contact us](#) or visit our [website](#).

