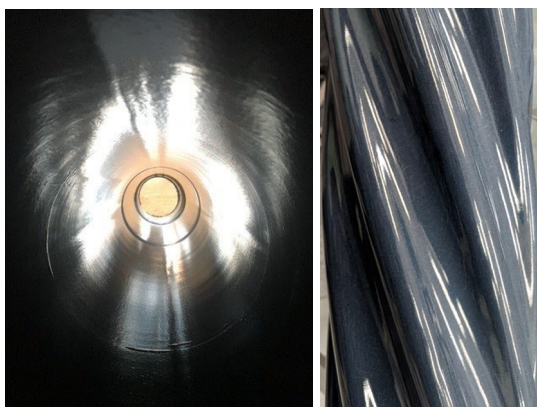


## Development of a Hydrogen-Specific Pipeline Coating and Liner Technology

AmpClad has developed a revolutionary inorganic coating that has now been independently proven to significantly mitigate the hydrogen permeation and hydrogen-induced cracking phenomena. It has also been independently proven to prevent corrosion and reduce GHG emissions in hydrogen transmission and distribution lines. These challenges, especially permeation, cracking and corrosion, pose significant technological, operational and economic challenges to the development of a global hydrogen energy infrastructure and there are currently very few economically viable alternative options. The scope of this project was to develop a coating that specifically addresses the unique challenges of the hydrogen industry and to progress the Technology Readiness status of the AmpClad coating to Level 6 in collaboration with Alberta Innovates, CFER Technologies, NRC-IRAP, hydrogen end users, key suppliers and Alberta academic institutions.

**RECIPIENT:**

**AmpClad Coating Technologies Inc.**

**PARTNERS:**

**NRC-IRAP**

**TOTAL BUDGET:**

**\$1,344,100**

**AI HCOE FUNDING:**

**\$672,050**

**PROJECT DATES:**

**MAR 2023 –  
MAY 2025**

**PROJECT TRL:**

**Start: 3  
End: 9**

## APPLICATION

The AmpClad coating can be cost-effectively applied to any hydrogen pipeline, piping system, vessel or production equipment that could be degraded due to the impact of hydrogen permeation, hydrogen-induced cracking or corrosion. An effective coating solution is of significant interest and application to all phases of the hydrogen ecosystem. In addition, the potential of the liner technology could enable customers to use existing gas pipeline infrastructure.

# ALBERTA INNOVATES CLEAN ENERGY

## CLEAN TECHNOLOGY

### HYDROGEN CENTRE OF EXCELLENCE

## PROJECT GOALS

- Develop a deeper understanding of the impacts of hydrogen flowstreams on pipelines, piping systems and critical components.
- Develop hydrogen-specific coating formulations.
- Design and build specialized hydrogen coating manufacturing equipment and ancillary systems.
- Develop a liner technology to facilitate re-purposing existing natural gas pipelines for hydrogen transmission.
- Install and commission a hydrogen coating automated manufacturing line in Edmonton.
- Design and execute a comprehensive test program and collaborate with CFER Technologies to independently verify and quantify the impact of the AmpClad coating on GHG reduction, permeability and cracking.
- Develop new IP and file multiple patents.

## BENEFITS TO ALBERTA

- AmpClad was founded by three companies whose owners have deep business and family roots in Alberta.
- The company aims to build a world-class coating technology development, manufacturing and testing facility in Edmonton.
- The AmpClad coating is unique and superior to any other known coating on the market. Together with the planned CFER Technologies full scale test loop, Alberta universities, and local laboratories, it could establish Alberta as a world leader in hydrogen technology and testing.
- Through its phased development and partnership model, the company would develop and grow multiple global revenue streams that would create many direct and indirect HQP jobs in Alberta.
- The growth of the business would also generate millions of dollars of work for the local supply chain.



**>15 Publications**



**1 Student Trained**



**1 Patent filed  
3 developed**



**6 Project Jobs**



**100+ Future Jobs**



**20 New  
Products/Services**



**4 Spinoff  
Companies**



**0 kt/yr Project GHGs  
Reduced**



**>100 kt/yr reduction  
in Future GHGs**

## CURRENT STATUS

### COMPLETE

The hydrogen coating and manufacturing equipment has been developed, tested and independently proven. The coating is being introduced through licensees to the North American, European and Asian markets and under consideration by the Canadian Energy Regulator for industry code best practice. The company is building its patent portfolio and seeking out new customers, licensees and investors, as well as additional government funding, to rapidly scale the company globally. The project is complete, and the final report is available on the Alberta Innovates website as of January 2026.