ALBERTA INNOVATES

CLEAN RESOURCES

CLEAN TECHNOLOGY

HYDROGEN

FUNDING DETAILS

Development of a Hydrogen Pipeline Coating and Liner Technology

AmpClad has developed an impermeable, inorganic coating that could significantly reduce corrosion, hydrogen permeation, cracking, and 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 few mitigation options. The scope of this project is 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:
$1,219,100

AI HCOE FUNDING:
$609,550

PROJECT DATES:
MAR 2023 – DEC 2024

PROJECT TRL:
Start: 3
End: 6

APPLICATION

The AmpClad coating can be applied to any hydrogen-related 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.

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PROJECT GOALS

- Develop a deeper understanding of the mechanical 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 thin-wall liner technology to facilitate using existing 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.

2-4 Publications

2-4 Students Trained

4-6 Project Jobs

100+ Future Jobs

6-10 New Products/Services

1-3 Patents

Up to 10% reduction in Future GHGs

CURRENT STATUS

FEB 2023

End user identification and needs assessment underway. Identification of challenges associated with pipeline coating deployment underway.