ALBERTA INNOVATES

CLEAN RESOURCES

CLEAN TECHNOLOGY

HYDROGEN CENTRE OF EXCELLENCE

FUNDING DETAILS

Resilient Pipelines, Resilient Energy

The “hydrogen economy” is premised on the idea that society can safely use hydrogen as an economically efficient and sustainable energy source. However, without total containment in the pipeline infrastructure, that premise is compromised.

Our team, in collaboration with our other industry partners such as Nukote Coating Systems, DNV, Equinox Engineering, and Nafta-Gaz Poland, want to tackle these challenges by augmenting TCI’s pipeline leak prevention and containment expertise with testing on the addition of a novel coating enhancement that can be applied using next generation robotics.

TOTAL CONTAINMENT INC.
THE ONLY LINE OF PROTECTION

RECIPIENT:
Total Containment Inc.

PARTNERS:
C-FER Technologies

TOTAL BUDGET:
$841,000

AI FUNDING:
$420,500

PROJECT DATES:
JAN 2024 – SEP 2025

PROJECT TRL:
Start: 5
End: 7

APPLICATION

The successful development of a hydrogen permeation barrier through this project would be game changing for pipeline operators because for the first time, it would enable long lengths of existing natural gas pipelines to be safely converted to hydrogen use.

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PROJECT GOALS

- The objective of Phase 1 would be to test the hypothesis that a chemically enhanced coating will significantly reduce hydrogen permeation in combination with polyurea.
- Contingent upon the success of Phase 1, Phase 2 would involve a small-scale demonstration using the latest robotic designs to identify the optimal installation procedures and techniques.
- Phase 2 would also examine the question “What is the critical point at which embrittlement becomes a significant concern?”

BENEFITS TO ALBERTA

- Directly support approximately 1320 hours of project labor time for TCI’s staff
- Directly supports significant labor hours at TCI’s contractor, C-FER Technologies
- A successful outcome would likely lead to further Alberta-based projects, job growth at TCI, and improved public safety.
- By 2030, target reductions in greenhouse gases could range between 2,900-290,000 tonnes CO2 eq annually
- By 2030, criteria pollutant reductions could range up to 1,475 tonnes annually.

2 Publications

0-2 Patents

6-8 Project Jobs

2 New Products/Services

10-30 Future Jobs

2.9-290 kt/yr Future GHGs Reduced

CURRENT STATUS

APR 2024

The project has commenced and is focused on testing/validating the performance of a proprietary ceramic polymer in reducing/preventing hydrogen permeation.