ALBERTA INNOVATES

ENERGY

HYDROGEN CENTRE OF EXCELLENCE

Establish Small- and Full-scale Testing Facilities for Testing in Hydrogen Environments – Tranche 2

C-FER Technologies (1999) Inc. ("C-FER") established small-scale and full-scale testing facilities for testing and evaluating materials and products in hydrogen environments. The new small-scale testing capabilities include pressure vessels, ventilation systems, and load frames for conducting industry standard and client-defined coupon tests. The new full-scale testing systems include systems to safely conduct combined load testing of full-scale pipeline and storage well equipment in hydrogen. While the facilities were primarily designed for testing in hydrogen, the equipment is also capable of testing with other gases, such as CO_2, H_2S, and CH_4.

FUNDING DETAILS

RECIPIENT:
C-FER Technologies (1999) Inc.

PARTNERS:
Prairies Economic Development Canada

TOTAL BUDGET:
$3,625,597

AI FUNDING:
$2,060,000

PROJECT DATES:
APR 2023 – AUG 2025

PROJECT TRL:
Start: N/A
End: N/A

APPLICATION

Facilities capable of conducting tests in high-pressure hydrogen were not available in Alberta and are rare globally. Clients can use these facilities to help refine new products, select the best available products, and support development of new regulations and standards.

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PROJECT GOALS

Expand C-FER's capabilities for testing in hydrogen, CO_2 and other hazardous environments in the following focus areas:

- Hydrogen permeation cells to test hydrogen resistant coatings;
- Full-scale storage well casing connection testing;
- Upgraded instrumentation to manage hydrogen testing;
- Improved material handling and storage for full-scale pipe specimens;
- Full-scale dynamic pressure pipe testing systems to evaluate the impacts of defects such as cracks, dents, and corrosion on pipe performance.

Secure industry funded projects to use the new testing facilities to qualify equipment for use in hydrogen environments.

BENEFITS TO ALBERTA

The availability of small-and full-scale hydrogen testing facilities capable of conducting tests in high-pressure hydrogen are rare globally. Having these facilities available locally positions Alberta as the 'go-to' centre for hydrogen testing globally. The facility also helps clients to advance the deployment of new products, select the best available products, and develop regulations and standards that will enable the commercial transition to hydrogen as part of Alberta's Hydrogen Roadmap. The results of these projects will help demonstrate the performance of various hydrogen-enabling technologies and assist pipeline and underground storage operators in making multi-billion dollar decisions for infrastructure development.

10 Publications

6 Students Trained

4 New Products/Services

4 Project Jobs

2 Future Jobs

CURRENT STATUS

NOV 2025

The project has been completed, with small- and full-scale testing facilities being developed and implemented. Several testing projects have been completed for Canadian and International industry clients and many more are underway and planned.