ALBERTA INNOVATES

CLEAN RESOURCES

CLEAN TECHNOLOGY

HYDROGEN CENTRE OF EXCELLENCE

FUNDING DETAILS

Next-Generation Polymer Lined High-Pressure Hydrogen Storage Cylinder

Luxfer designs and manufactures high pressure composite cylinders for the alternative fuel industry and other markets. This project will be to design and develop the next-generation polymer lined Type 4 high-pressure hydrogen storage cylinder, exercise this proof of concept and develop it from the current design concept to full prototype capable of being tested internally and in collaboration with Luxfer's integration partners, and best-case scenario of production readiness for the market by the end of the project.

This newly designed method of liner manufacturing offers a substantial reduction in components resulting in an optimized production process.

RECIPIENT:
Luxfer Gas Cylinders

PARTNERS:
HTEC
NextGen
Hydra Energy

TOTAL BUDGET:
$4,370,000

AI FUNDING:
$2,000,000

PROJECT DATES:
JAN 2024 – FEB 2026

PROJECT TRL:
Start: 3
End: 6

APPLICATION

This project will support innovative Type 4 high pressure 700 bar hydrogen storage cylinder development and drive broad adoption of clean hydrogen mobile end-use applications. Polymer-lined cylinders offer the benefit of enhanced efficiency, a promising choice for hydrogen mobility regarding its environmental impact, economic performance, and weight reduction especially in applications requiring high volumes of hydrogen storage.

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PROJECT GOALS

- Luxfer will design and develop the next-generation polymer lined Type 4 high-pressure hydrogen storage cylinder.
- Exercise this proof of concept and develop it from the current TRL 3 to TRL 6 full prototype capable of being tested internally and in collaboration with Luxfer's integration partners.
- The project optimal scenario is production readiness at the completion of the project.

BENEFITS TO ALBERTA

- The project will support Alberta's hydrogen economy and supply chain as a vital and efficient component in the hydrogen fuel storage and transportation space.
- Expanded employment in the advanced materials sector.
- Increased revenue including enhanced economic diversification.
- Strengthen Alberta as a self-sufficient and global sustainability leader in hydrogen production, end-use, export, and clean technology market.

2 Publications

1 Patent

3-5 Project Jobs

30-50 Future Jobs

1 New Product/Service

8.5 kt/yr. Future GHGs Reduced

CURRENT STATUS

APR 2024

The project has commenced and is focused on the design of the metallic cylinder boss connection to the polymer liner interface including the low pressure test.