

CLEAN RESOURCES

ADVANCED HYDROCARBONS

CLEANER HYDROCARBON PRODUCTION – METHANE EMISSIONS REDUCTION

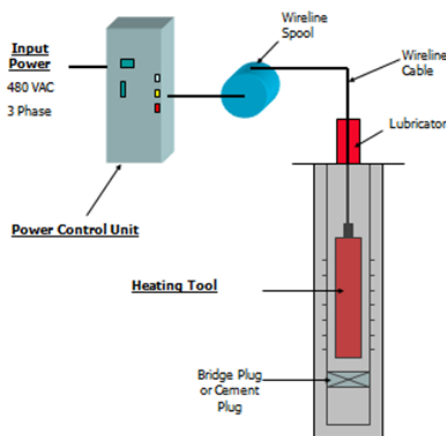
FUNDING DETAILS

Field Demonstration of Bismuth Alloy Sealing Technology Phase 2

Seal Well has developed more reliable plugging and sealing tools and procedures for oil and gas wells using the unique properties of fusible bismuth-based alloys as the sealing agent. Applications of the proprietary techniques include permanent leak-free well abandonments, repair of vent gas flows by sealing the well annulus within cap rock, repair of casing leaks, precision plugging of perforations, zonal isolation, and permanent containment of geologically stored greenhouse gases. Seal Well’s method involves lowering an electrical heating tool and solid alloy into a well on a wireline cable to the site of the repair. The molten alloy is “squeezed” through perforations in the well casing into the well annulus and allowed to solidify.

Alloy Plugging Process*

* Process and Heating Tool covered by various issued and pending Canadian, US, and foreign patents.



RECIPIENT:
Seal Well Inc.



PARTNERS:
NRCan
DataCan, Perfco,
Tier 1 Energy Services,
HiFi Engineering,
Industry



TOTAL BUDGET:
\$1,081,124



AI FUNDING:
\$446,000



PROJECT DATES:
MAR 2016 –
DEC 2020



PROJECT TRL:
Start: 7
End: 9

APPLICATION

The principal initial target market is the remediation and abandonment of idle wells in Alberta and western Canada. The technology and methods developed have wide application in the hydrocarbon production industry world-wide.



ALBERTA INNOVATES CLEAN RESOURCES

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PROJECT GOALS

This project will

- Demonstrate the reliability and favorable economics of the technology and methods through field demonstrations on problem Alberta wells. Comprehensive third-party laboratory investigation has confirmed the extraordinary service life to be expected from sealing wells with bismuth-based alloys.
- Garner industry acceptance of the technology based upon the field demonstrations. Well nominations have been received from well operators and planning proceeds for the field demonstrations that will conclude this project.
- Drive large scale commercialization of the technology through collaboration with existing well service organizations.

BENEFITS TO ALBERTA

Alberta will benefit from

- Reductions in greenhouse gas emissions from large numbers of Alberta wells exhibiting annular leakage.
- Modifications of the AER well abandonment regulations to prevent long term failure of plugging procedures traditionally followed in Alberta and elsewhere.
- Significant opportunities for export of equipment and technology licenses to the industry outside of Alberta and Canada.



2 Patents



1 - 10 Project Jobs



11 – 100 Future Jobs



1 New Product



7.5 kT/yr Project GHGs Reduced



10,000-30,000 kT/yr Future GHGs

CURRENT STATUS

June 2020

Laboratory and field applications of the technology using prototype tools has established the practical feasibility of the methods and materials employed.

Next generation tool designs, power control equipment, and real-time data logging electronics have been added and are ready for further field demonstrations planned for July 2020.