

CLEAN RESOURCES

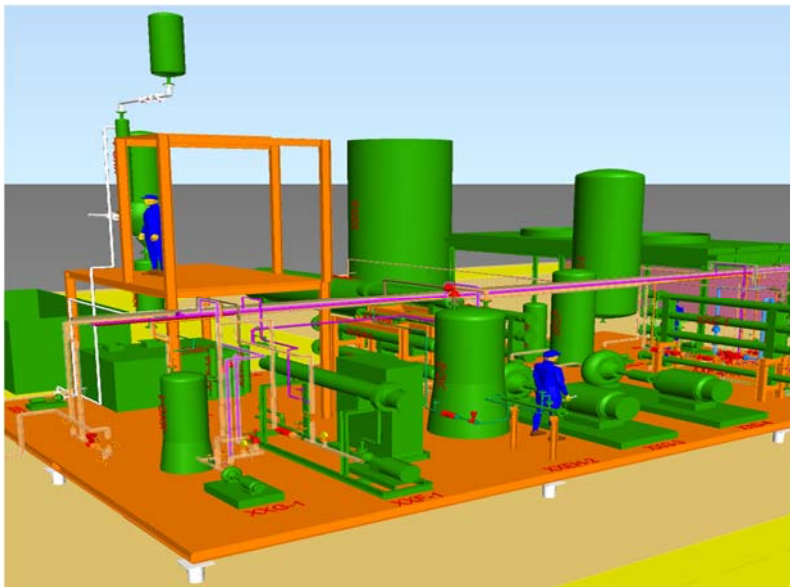
ADVANCED HYDROCARBONS

INNOVATIVE HYDROCARBON PRODUCTS – PARTIAL UPGRADING

FUNDING DETAILS

Commercial Demonstration of Partial Upgrading Technology

Suncor is advancing the development of innovative partial upgrading technologies to reduce diluent requirements for bitumen transportation and to increase the value of the bitumen product. This continuous partial upgrading demonstration plant will operate up to 500 bpd (bitumen basis) for various feedstock and deployment scenarios. The objective of the demonstration plant operation is to de-risk the technology using commercially available equipment and prove the performance to finalize the business case for commercial deployment. The technology, if successful, has the potential to improve market access for Alberta bitumen products, add value to bitumen and reduce life cycle GHG emissions.



Preliminary 3D model of Demonstration facility



RECIPIENT:
Suncor Energy Inc.



PARTNERS:
N/A



TOTAL BUDGET:
\$50,000,000



AI FUNDING:
\$2,500,000
TIER



PROJECT DATES:
JAN 2021 –
JAN 2023



PROJECT TRL:
Start: 7
End: 9

APPLICATION

Bench and pilot scale test work has been conducted at various test locations. These early tests were conducted to support initial deployment opportunities and business case assessments. In many cases however, optimization in a fully integrated test system mimicking commercial operation has not been conducted. This application is specifically designed to demonstrate the Suncor partial upgrading technology using commercially available equipment to de-risk the technology for commercial operation.

ALBERTA INNOVATES CLEAN RESOURCES

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PROJECT GOALS

This project aims to provide confidence in any investment decision to commercially deploy the technology. The primary aim during this phase of the program is to mitigate technology scale up issues using commercially available equipment to inform commercial equipment design, operating conditions and the selected process configuration to optimize returns for commercial deployment pathways. A secondary goal for the project is to obtain data to benchmark the reliability profile for the technology through operating the demonstration unit over an extended period of time. Preparations for commercial scale-up can begin during this demonstration phase of the initiative.

BENEFITS TO ALBERTA

Suncor envisions the creation of a new Alberta bitumen product through the commercial deployment of this Partial Upgrading technology. This technology aims to improve the quality of bitumen by processing it to the point where it can meet pipeline specifications thereby eliminating the need for diluents for transportation via pipeline. Partial upgrading has the potential to add value to bitumen products and reduce the overall GHG emissions, CAPEX and OPEX for bitumen conversion (compared to full upgrading). A reduction in GHG emissions will be achieved through elimination of unnecessary utilities, minimizing the amount of energy input and maximizing heat integration. The process also targets no process water or steam, eliminating the need and costs for a steam plant, sour water stripping, and water treatment.



1-2 Publications



1-3 Students
Trained



0-1 Patents



75-100 Project Jobs



100's of Future Jobs



1-2 New
Products/Services



0-1 Spinoff
Companies



N/A kT/yr Project
GHGs Reduced



15-20 kg CO₂e/bbl
Future GHGs
Reduced

CURRENT STATUS

JUN 2021

Heat and material balance, Process flow diagrams, issued for design process and instrumentation diagrams, 30% 3D model, procurement plan and Class 3 cost estimate have been completed.