

ALBERTA INNOVATES CLEAN RESOURCES

ADVANCED HYDROCARBONS

INNOVATIVE HYDROCARBON PRODUCTS – BITUMEN ADVANCED MATERIALS

FUNDING DETAILS

Solideum 1,000 bpd Field Pilot

Solideum's technology yields two valuable products from bitumen: a 27-33API low-sulphur distillate oil product and a heavy cut product. The heavy cut product can be supplied as a hot product or converted to a pellet/flake solid product that are feedstock materials to the asphalt market. For local markets, the heated heavy cut product is preferred. For international transport of the heavy cut, pellets and flake are preferred. The distillate can be used as an oil product or dilutant for bitumen transport. Solideum's technology can produce up to 50% by volume distillate with the remaining being the heavy cut.



Pelleted asphalt binder from Solideum process ready for rail or truck transport.



RECIPIENT:
Solideum Inc.



PARTNERS:
CEDA



TOTAL BUDGET:
\$4,900,000



AI FUNDING:
\$1,190,000



PROJECT DATES:
FEB 2021 –
DEC 2024



PROJECT TRL:
Start: 6
End: 7

APPLICATION

Solideum has developed a completely different approach to the production of asphalt binders from bitumen that is much simpler and cheaper for application in small scale plants, especially in the range of 1000-10,000 barrels per day. At the start of the project the technology was at laboratory scale – multiple continuous 1-2 barrel per day units yielded heavy cut (pellet/flake and asphalt binder feedstock) and distillate (typically between 27 and 33°API).

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Classification: Protected A



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PROJECT GOALS

- The proposed project will conduct a 300-500 barrel per day pilot of Solideum's technology to
 - Confirm its capital cost reduction potential
 - Verify its energy consumption and find opportunities for improvement of energy efficiency when integrated with SAGD plants
 - Demonstrate its environmental (GHG emissions) and economic benefits.

BENEFITS TO ALBERTA

- Estimates for new employment opportunities resulting from the proposed project are estimated (at the low end) to be roughly 20 for pilot plant fabrication, installation, and commissioning
- Together with the 3 HQSP, we estimate that 23 jobs will be created or preserved from this project
- If the technology is fully commercialized and achieves a market of 50,000 bpd then we expect to create 150 jobs in engineering, fabrication, and operations
- SAGD operators will realize higher prices for bitumen-derived distillate and asphalt binder
- The Solideum process diverts bitumen heavy fractions from fuel to production of value-added asphalt, thereby reducing carbon dioxide emissions associated with bitumen utilization.



**3 Students
Trained**



20 Project Jobs



150 Future Jobs



**1 New
Product/Service**



**1-5 kT/yr Future
GHGs Reduced**

CURRENT STATUS

MAY 2025

The pilot unit was successful at up to 125 barrels per day throughput using electric heating. Yields and performance were consistent with the lab scale tests. Further scale up for field demonstration using a natural gas fired heater was not successful, because full 24/7 multi-day stable operation was not achieved. Operations with modified equipment are planned during warmer weather, to verify extended steady operation and performance.